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THE PLANT DISEASE REPORTER

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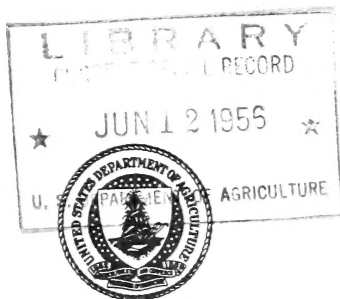
PLANT DISEASE EPIDEMICS
and
IDENTIFICATION SECTION

AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

HOST INDEX AND MORPHOLOGICAL CHARACTERIZATION OF THE
GRASS RUSTS OF THE WORLD

Supplement 237

May 15, 1956



The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Plant Disease Epidemics and Identification Section serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

PLANT DISEASE EPIDEMICS AND IDENTIFICATION SECTION

Horticultural Crops
Research Branch

Plant Industry Station
Beltsville, Maryland

HOST INDEX AND MORPHOLOGICAL CHARACTERIZATION OF THE GRASS RUSTS OF THE WORLD

George B. Cummins

Plant Disease Reporter
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Introduction

This host index and tabulation of the principal morphological characteristics of the rust fungi parasitic on the grasses has been compiled as a preliminary but necessary adjunct to a monographic study of the grass rust fungi of the world. The records have been compiled from many sources, including the Sydow's "Monographia Uredinearum", regional manuals, regional lists, specimens in the Arthur Herbarium and the National Fungus Collections, and indexes maintained by the author. While it is believed to be reasonably complete it is almost a certainty that records have been overlooked. Moreover, errors may exist in the listing of species and synonyms since only certain tribes, notably the Andropogoneae and the Chlorideae, have been studied in detail. From the author's point of view, the work required to bring additional refinement to the index and tabulation does not seem to be warranted. As a preliminary tool, however, the compilation appears to have some value if for no other reason than that the vast majority, at least, of the species of the rust fungi are assembled and characterized and the probable synonymy indicated.

The Host Index

The host index is by genera of the grasses with the tribe indicated for each genus. Following each genus are listed the species of rust fungi, including certain or probable synonyms, recorded as occurring on species of that genus. A Roman numeral follows each accepted or "good" species. This numeral refers to the one of the nine main morphological groups into which the species have been arbitrarily segregated. By itself, the numeral indicates certain of the morphological characteristics of the uredia of the species since the groups are based on uredial and urediospore morphology. The characteristics of the groups follow:

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- GROUP I: Uredia with paraphyses; urediospores echinulate; pores equatorial.
- GROUP II: Uredia with paraphyses; urediospores echinulate; pores scattered.
- GROUP III: Uredia with paraphyses; urediospores verrucose; pores equatorial. A hypothetical group since no species are known.
- GROUP IV: Uredia with paraphyses; urediospores verrucose; pores scattered.
- GROUP V: Uredia without paraphyses; urediospores echinulate; pores equatorial.
- GROUP VI: Uredia without paraphyses; urediospores echinulate; pores scattered.
- GROUP VII: Uredia without paraphyses; urediospores verrucose; pores equatorial.
- GROUP VIII: Uredia without paraphyses; urediospores verrucose; pores scattered.
- GROUP IX: Uredia not developed or unknown; species of uncertain characteristics, etc.

In only a few cases is the presence of paraphyses variable within a species as, for example, Puccinia coronata sensu lat. Since P. coronata has echinulate urediospores and scattered pores it is listed as "Puccinia coronata Cda. (II, VI)" to account for collections with or without paraphyses. Likewise, the arrangement of the pores is a remarkably stable character. The detection of pores is usually easy when they are equatorial but often difficult when they are scattered. The pores are most difficult to see in pale spores and easiest to see in pigmented spores. Because of the difficulty of making accurate counts, the number of pores in scattered-pored species is best viewed as an approximation. Even when the actual pores cannot be seen their location may be indicated by slight "cuticular caps" protruding over each pore or often the wall may be indented slightly at each pore. Pores are usually more readily observed in empty spores or in spores cleared in lactic acid, chloral hydrate solution, or glycerin-alcohol. Proper orientation of the spore, with the hilum as the point of reference, is essential in determining the arrangement of the pores. Despite the occasional variation and the implied difficulties the vast majority of the species are readily assignable in the group scheme. Verrucose, as used here, implies hemispherical warts, minute and densely grouped in most cases, while echinulate applies to conical points with the points usually spaced one micron or more apart. There are relatively few species that I consider to be truly verrucose.

The Data Tabulations

The species of the rust fungi are tabulated alphabetically under the groups. Following the species name are tabulated the urediospore wall color, the wall thickness, the number of germ pores, the spore sizes, whether the telia are covered or naked and, if covered, whether they have paraphyses, the color of the teliospore wall, the thickness of the side wall and the apical wall, the approximate maximum length of the pedicel, and special characteristics. Teliospores that are not smooth, those that are diorchidioid (septum mostly vertical), those that characteristically have more than one septum (rostrupoid), those with coronate apex, and those with the lower germ pore depressed rather than apical are indicated under "special". A few uredial characters, such as

the development of amphispores, thickened apical wall, strongly incurved dorsally thick-walled (phakopsoroid) paraphyses, etc. are also so indicated. Thus, the principal features included in the average written description are presented in tabular form.

If one knows the genus of the rusted grass one can find the species recorded as parasitizing species of that genus and, by checking the data for each parasite, decide which species one probably has. Assuming that one does not know the identity of the host it is possible to arrive at an approximate identification by examining the data tabulated for the major group in which the collection belongs. For example, if telia of the collection are exposed then the species checked as having covered telia need not be considered; if the teliospore pedicels are 15 microns in length then those species with pedicels 30 microns or more could be disregarded, etc.

Appendices

Certain species "complexes" present such difficulty that solutions have not been attempted. Three (and there are more) of these complexes have been arbitrarily presented as three species in the index and the main data tabulations. The species are: 1) Puccinia coronata sensu lat., 2) Puccinia recondita sensu lat. (P. rubigo-vera) and 3) Uromyces dactylidis sensu lat. Data for the "species" treated as synonyms are tabulated in appended lists, with the source of the data indicated for each. In P. recondita and U. dactylidis the differences involved between synonymous species are almost exclusively those of spore dimensions. Among the synonyms of P. coronata, in addition to diversity in spore dimensions, there are differences in the length of the digitations (crown), in the presence or abundance of uredial and telial paraphyses, and in the exposure of the telia. The appended tabulations will have served their purpose if they demonstrate nothing beyond the fact that names exist for just about every possible variant. They also demonstrate that the "complexes" are decidedly unwieldy and indicate the possible need for sub-specific taxa based on morphological characters, even if the characters used be only arbitrarily chosen size groups.

Abbreviations Used in Tabulations

h: hyaline
y: yellowish
g: golden-brown
ci: cinnamon-brown
ch: chestnut-brown

nak: naked (telia exposed)
cov: covered (telia under epidermis)
par: paraphyses
ped: pedicel (length)
all measurements are in microns

GENERIC HOST INDEX TO THE GRASS RUSTS OF THE WORLD

Aegilops (Hordeae):

- Puccinia aegilopis* Maire (=P. recondita)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia striiformis West. (VI)

Aegopogon (Zoysieae):

- Puccinia aegopogonis* Arth. et Holw. (VI)
Uromyces aegopogonis Diet. et Holw. (VI)

Aeluropus (Festuceae):

- Puccinia aeluropodis* Ricker (VII)
Puccinia tankuensis Liou et Wang (IX)
Puccinia zoysiae Diet. (Host?) (VI)
Uredo aeluropodina Maire (=Uromyces aeluropodis-repentis)
Uromyces aeluropodinus Tranz. (=U. aeluropodis-repentis)
Uromyces aeluropodis-repentis Nattrass (VII)

Agropyron (Hordeae):

- Puccinia actaeae-agropyri* E. Fisch. (=P. recondita)
Puccinia agropyri Ell. et Ev. (=P. recondita)
Puccinia agropyri-ciliaris Tai et Wei (VI)
Puccinia agropyricola Hirat. f. (VI)
Puccinia agropyri-junceae Kleb. (=P. recondita)
Puccinia agropyrina Eriks. (=P. recondita)
Puccinia anthistiriae Barclay (=P. graminis)
Puccinia cerinthes-agropyrina Tranz. (=P. recondita)
Puccinia coronata Cda. (II, VI)
Puccinia coronifera Kleb. (=P. coronata)
Puccinia culmicola Diet. (=P. graminis)
Puccinia dietrichiana Tranz. (=P. recondita)
Puccinia dispersa Eriks. et E. Henn. (=P. recondita)
Puccinia glumarum (Schmidt.) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia hepaticae-agropyri Mayor (=P. recondita)
Puccinia montanensis Ell. (II)
Puccinia pattersoniana Arth. (VI)
Puccinia persistens Plowr. (=P. recondita)
Puccinia rangiferina Ito (=P. coronata)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia striiformis West. (VI)
Puccinia subalpina Lagh. (=P. recondita)
Puccinia thulensis Lagh. (=P. recondita)
Rostrupia miyabeana Ito (=Puccinia agropyricola)
Uromyces agropyri Barclay (VIII)
Uromyces fragilipes Tranz. (VI?)

Agrostis (Agrostideae):

- Puccinia agrostidicola* Tai (VI)
Puccinia agrostidis Plowr. (=P. recondita)
Puccinia borealis Juel (=P. recondita)
Puccinia coronata Cda. (II, VI)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)

Puccinia kummerii Caeum. (=P. poarum?)
Puccinia liatridis Bethel (VI)
Puccinia moyanoi Speg. (VI)
Puccinia poae-nemoralis Otth (II)
Puccinia poarum Niels.? (VI)
Puccinia praegracilis Arth. (VI)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera DC. (=P. recondita)
Puccinia striiformis West. (VI)
Uredo agrostidis Arth. et. Cumm. (II)
Uredo agrostidis-rupestris E. Fisch. (=Puccinia poae-nemoralis)
Uromyces agrostidis (Gonz. Frag.) Guyot (=U. dactylidis)
Uromyces dactylidis Otth (VI)
Uromyces jacksonii Arth. et Fromme (=U. mysticus)
Uromyces mysticus Arth. (VI)
Uromyces poae Rab. (=U. dactylidis)
Uromyces poae Rab. f. *agrostidis* Gonz. Frag. (=U. dactylidis)

Aira, see Deschampsia

Alopecurus (Agrostideae):

Puccinia coronata Cda. (II, VI)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia lolii Niels. (=coronata)
Puccinia perplexans Plowr. (=P. recondita)
Puccinia poae-nemoralis Otth (II)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia striiformis West. (VI)
Uromyces alopecuri Szym. (=U. dactylidis)
Uromyces dactylidis Otth (VI)

Ammophila (Agrostideae):

Puccinia ammophilae Guyot (=P. recondita)
Puccinia ammophilina Mains (II)
Puccinia amphigena Diet. (VI)
Puccinia coronata Cda. (II, VI)
Puccinia graminis Pers (V)
Puccinia pygmaea Eriks. (II)
Rostrupia ammophilae M. Wils. nom. nud. (=P. recondita?, P. elymi?)
Uredo ammophilae Syd. (=Puccinia recondita?)
Uredo ammophilina Kleb. (=Puccinia ammophilina)

Amphibromus (Aveneae):

Puccinia graminis Pers. (V)

Amphilophis, see Bothriochloa

Andropogon (Andropogoneae): see also Bothriochloa, Capillipedium, Chrysopogon,

Cymbopogon, Dichanthium, Hyparrhenia

Phakopsora incompleta (Syd.) Cumm. (II)

Puccinia agrophila Syd. (VI)

Puccinia andropogonicola Hariot et Pat. (I) (Host probably Cymbopogon)

Puccinia andropogonis Schw. (V, VI)

Puccinia coronata Cda. (Host?) (II)

Puccinia citrata Syd. (=P. nakamishikii)

Puccinia duthiae Ell. et Tracy (Host?) (I)

Puccinia ellisiana Thuem. (VII)

Puccinia erianthicola Cumm. (Host?) (V)

Puccinia erythraeensis Paz. (II) (P. erythraeensis)

Puccinia eucomi Doidge (V)

Puccinia graminis Pers. (Host?) (V)

Puccinia incompleta Syd. (=Phakopsora incompleta)

- Puccinia jaagi* Boed. (on Sorgum)
Puccinia kaernbachii Arth. (= P. posadensis)
Puccinia microspora Diet. (Host?) (I)
Puccinia nakanishikii Diet. (I)
Puccinia posadensis Sacc. et Trott. (I)
Puccinia prunicolor Syd. et Butl. (= P. purpurea on Sorgum)
Puccinia purpurea Cke. (Host?) (II)
Puccinia tripsaci Diet. et Holw. (V)
Puccinia versicolor Diet. et Holw. (VI)
Uredo andropogonis-lepidi P. Henn. (VI)
Uredo andropogonis-zealandicae Petch (VI)
Uredo geniculata Cumm. (II)
Uredo rubida Arth. et Holw. (= Puccinia erianthicola)
Uredo schizachyrii Doidge (I)
Uredo schoenanthi Syd. (= Uromyces schoenanthi)
Uredo susica Maire (VIII)
Uromyces andropogonis Tracy (VII)
Uromyces andropogonis-annulati Syd. et Butl. (= U. clygnii)
Uromyces clignyi Pat. et Hariot (VI)
Uromyces schoenanthi Syd. (Host?) (V)
- Anthistiria (Andropogoneae):
- Puccinia anthistiriae* Barclay (= P. graminis on Agropyron)
Uredo anthistiriae Petch (VI)
Uredo anthistiriae-tremulae Petch (IV)
- Antheophora (Zoisieae):
- Puccinia antheophorae* Arth. et J.R. Johnston (VII)
Puccinia cenchri Diet. et Holw. (Host?) (V)
Puccinia chaseana Arth. et Fromme (I)
- Anthoxanthum (Phalarideae):
- Puccinia anthoxanthi* Fckl. (= P. graminis)
Puccinia anthoxanthina Gaeum. (= P. poae-nemoralis)
Puccinia borealis Juel (= P. recondita)
Puccinia fujiensis Ito (= P. recondita)
Puccinia graminis Pers. (V)
Puccinia poae-nemoralis Otth (II)
Puccinia poae-sudeticae Joerst. (= P. poae-nemoralis)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia sardonensis Gaeum. (= P. recondita)
Uredo anthoxanthina Bub. (= P. poae-nemoralis)
- Apera (Agrostideae):
- Puccinia graminis* Pers. (V)
Puccinia poae-nemoralis Otth? (II)
Puccinia spicae-venti Bucholtz (Host?) (= P. poae-nemoralis?)
- Apluda (Andropogoneae):
- Puccinia apludae* Syd. (I)
Uredo apludae Barclay (VII)
Uromyces apludae Syd. and Butl. (= U. schoenanthi)
Uromyces inayati Syd. (VII)
Uromyces schoenanthi Syd. (V)
- Arctagrostis (Agrostideae):
- Puccinia poae-nemoralis* Otth (II)
Puccinia pygmaea Eriks. (error for P. poae-nemoralis)
- Aristida (Agrostideae):
- Puccinia aristidae* Tracy (VII)
Puccinia aristidicola P. Henn. (= P. boutelouae on Bouteloua)
Puccinia bottomleyae Doidge (II)
Puccinia eylesii Doidge (II)

Puccinia graminis Pers. (V)
Puccinia subnitens Diet. (=P. aristidae)
Puccinia unica Holw. (I)
Uredo aristidae-acutiflorae Maire (VII)
Uromyces aristidae Ell. et Ev. (II)
Uromyces peckianus Farl. (VIII)
Uromyces setitiosus Kern (=U. peckianus)

Arrhenatherum (Aveneae):

Puccinia arrhenatheri Eriks. (=P. poae-nemoralis)
Puccinia arrhenathericola E. Fisch. (=P. recondita)
Puccinia coronata Cda. (II, VI)
Puccinia coronifera Kleb. (=P. coronata)
Puccinia graminis Pers. (V)
Puccinia montanensis Ell. (II)
Puccinia poae-nemoralis Othh (II)
Puccinia recondita Rob. ex Desm. (VI)

Arthraxon (Andropogoneae):

Puccinia aestivalis Diet. (Host?) (I)
Puccinia arthraxonis Syd. et Butl. (VI)
Puccinia arthraxonis-ciliaris Cumm. (I)
Uredo arthraxonis-ciliaris P. Henn. (=P. arthraxonis-ciliaris)

Arthrostylidium (Bambuseae):

Uredo ignava Arth. (I)

Arundinaria (Bambuseae):

Puccinia arundinariae Schw. (V)
Puccinia bambusarum Arth. (V)
Puccinia kusanoii Diet. (V)
Puccinia longicornis Hariot et Pat. (I)
Puccinia melanocephala Syd. (I)
Puccinia phyllostachydis Kus. (I)
Stereostratum corticioides (Berk. et Br.) Magn. (V)

Arundinella (Melinideae):

Puccinia arundinellae Barclay (VI)
Puccinia arundinellae-anomala Diet. (VI)
Puccinia arundinellae-setosae Tai (I)
Puccinia coronata Cda. (II, VI)
Uredo arundinellae Arth. et Holw. (V)
Uredo arundinellae-nepalensis Cumm. (I)
Uredo nakanishikii P. Henn. (V)
Uredo pretoriensis Syd. (=P. arundinellae)
Uredo yoshinagai Diet. (VI)

Arundo (Festuceae):

Puccinia coronata Cda. (error for P. recondita)
Puccinia isiacae Wint. (V)
Puccinia magnusiana Koern. (II)
Puccinia phragmitis Koern. (V)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia torosa Thuem. (V)
Uredo arundinis-donacis Tai (I)
Uredo toetoe Cunn. (VI)

Astrebla (Chlorideae):

Uromyces trichoneurae Doidge (V)

Atropis, see Puccinellia

Axonopus (Paniceae):

Angiopsora compressa (Arth. et Holw.) Mains (II)
Puccinia levis (sacc. et Bizz.) Magn. (V)

Avellinia (Festuceae):

Puccinia schismi Bub. (VI)

Avena (Aveneae):

Puccinia avenae-barbatae Gonz. Frag. (= *P. coronata*)

Puccinia avenae-pubescentis Bub. (= *P. graminis* on *Anthoxanthum*)

Puccinia avenastri Guyot (= *P. sesleriae* on *Sesleria*)

Puccinia bromoides Guyot (VI)

Puccinia coronata Cda. (II, VI)

Puccinia coronifera Kleb. (= *P. coronata*)

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)

Puccinia graminis Pers. (V)

Puccinia lolii Niels. (= *P. coronata*)

Puccinia pratensis Blytt (VI)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (= *P. recondita*)

Puccinia striiformis West.? (VI)

Puccinia versicoloris Semadeni (VI)

Uredo avenae-pratensis Eriks. (= *P. pratensis*)

Bambusa (Bambuseae): (Many host records doubtful)

Angiopsora divina Syd. (= *Dasturella divina*)

Chrysomyxa bambusae Teng (=no rust)

Dasturella bambusina Mundk. et Kheswalla (I)

Dasturella divina (Syd.) Mundk. et Kheswalla (I)

Kweilingia bambusae (Teng) Teng (=no rust)

Puccinia amianthina Syd. (IX)

Puccinia corticioides Berk. et Br. (= *Stereostromum corticioides*)

Puccinia gracilentia Syd. et Butl. (IX)

Puccinia kusanooi Diet. (V)

Puccinia kwanhsiensis Tai (II)

Puccinia longicornis Pat. et Hariot (I)

Puccinia melanocephala Syd. (I)

Puccinia mitriformis Ito (IX)

Puccinia phyllostachydis Kus. (I)

Puccinia xanthosperma Syd. (IX)

Uredo ignava Arth. (I)

Beckeropsis, see *Pennisetum*Beckmannia (Agrostideae):

Puccinia beckmanniae McAlp. (= *P. coronata*)

Puccinia coronata Cda. (II, VI)

Puccinia graminis Pers. (V)

Uromyces beckmanniae Jacks. (VI)

Bewsia (Festuceae):

Puccinia bewsiae Cumm. (IX)

Bothriochloa (Andropogoneae):

Puccinia amphiphididis Doidge (= *P. duthiae*)

Puccinia cesatii Schroet. (VII)

Puccinia duthiae Ell. et Tracy (I)

Puccinia infuscans Arth. et Holw. (VII)

Puccinia kernmorensis Cumm. (II)

Puccinia meridensis Kern (VII)

Puccinia nakanishikii Diet. (Host?) (I)

Puccinia propinqua Syd. et Butl. (= *P. cesatii*)

Puccinia pseudocesatii Cumm. (VII)

Puccinia versicolor Diet. et Holw. (VI)

Uromyces amphiphididis-insculptae T.S. Ramak., Srinivasan et Sundaram

(= *U. clignyi*)

Uromyces andropogonis Tracy (=error for *P. meridensis*)
Uromyces andropogonis-annulati Syd. et Butl. (= *U. clignyi*)
Uromyces clignyi Pat. et Hariot (VI)

Bouteloua (Chlorideae):

Puccinia bartholomaei Diet. (= *P. chloridis*)
Puccinia boutelouae (Jennings) Holw. (VI)
Puccinia cacabata Arth. et Holw. (V)
Puccinia chloridis Speg. (VI)
Puccinia exasperans Holw. (VI)
Puccinia opuntiae Arth. et Holw. (VIII)
Puccinia stakmanii Presley (= *P. cacabata*)
Puccinia vexans Farl. (VI)
Uredo chardonii Kern (= *P. boutelouae*)

Brachiaria (Paniceae):

Angiopsora africana Cumm. (I)
Diorchidium brachiariae Wakef. et Hansf. (= *Puccinia*) (V)
Puccinia nyalalandica Cumm. (VI)
Uromyces leptodermus Syd. (V)

Brachyelytrum (Agrostideae):

Uromyces halstedii De T. (I)

Brachypodium (Festuceae):

Puccinia agropyri Ell. et Ev. (= *P. recondita*)
Puccinia agropyricola Hirat. f. (VI)
Puccinia baryi (Berk. et Br.) Wint. (= *P. brachypodii*)
Puccinia brachypodii Otth (II)
Puccinia brachysora Diet. (= *P. recondita*)
Puccinia coronata Cda. (II, VI)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)
Puccinia graminis Pers. (V)
Puccinia himalayensis (Barclay) Diet. (= *P. coronata*)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (= *P. recondita*)
Puccinia striiformis West. (VI)
Puccinia subdigitata Arth. et Holw. (= *P. coronata*)
Rostrupia miyabeana Ito (= *P. agropyricola*)

Briza (Festuceae):

Puccinia brizae-maximae T.S. Ramak et Sundaram (= *P. graminis*)
Puccinia coronata Cda. (II, VI)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)
Puccinia graminis Pers. (V)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (= *P. recondita*)
Puccinia striiformis West. (VI)

Bromus (Festuceae):

Puccinia alternans Arth. (= *P. recondita*)
Puccinia brachypus Speg. (= *P. recondita*)
Puccinia bromicola (Mains) Guyot (= *P. recondita*)
Puccinia bromi-japonicae Ito (= *P. recondita*)
Puccinia bromi-maximi Guyot (= *P. recondita*)
Puccinia bromina Eriks. (= *P. recondita*)
Puccinia bromi-rupestris Maire (= *P. recondita*)
Puccinia coronata Cda. (II, VI)
Puccinia coronifera Kleb. (= *P. coronata*)
Puccinia cryptica Arth. et Holw. (VI)
Puccinia decolorata Arth. et Holw. (II)

- Puccinia elymi* West. (=error for *P. recondita*)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia madritensis Maire (=P. recondita)
Puccinia montanensis Ell. (II)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia striiformis West. (VI)
Puccinia symphyti-bromorum F. Muell. (=P. recondita)
Puccinia tomipara Trel. (VI)
Uredo auletica Speg. (=P. recondita)
Uredo bromi-pauciflorae Ito (II)
Uromyces bromicola Arth. et Holw. (VI)
Uromyces brominus Gutsevich (VI?)

Buchloe (Chlorideae):

- Puccinia graminis* Pers. (V)
Puccinia kansensis Ell. et Barth. (VI)

Calamagrostis (Agrostideae):

- Puccinia alpinae-coronatae* Muehleth. (=P. coronata)
Puccinia borealis Juel (=P. recondita)
Puccinia brevicornis Ito (=P. coronata)
Puccinia coronata Cda. (II, VI)
Puccinia coronifera Kleb. (=P. coronata)
Puccinia epigejos Ito (=P. coronata)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia hierochloae Ito (=P. coronata)
Puccinia ishikawai Ito (=P. pygmaea)
Puccinia pertenuis Ito (=P. coronata)
Puccinia poae-nemoralis Otth (II)
Puccinia poarum Niels. (error for *P. poae-nemoralis*)
Puccinia pygmaea Eriks. (II)
Puccinia rangiferina Ito (=P. coronata)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia stichosora Diet. (II)
Puccinia striiformis West. (VI)
Uredo paulensis P. Henn. (=P. poae-nemoralis)

Calamovilfa (Agrostideae):

- Puccinia amphigena* Diet. (VI)
Puccinia graminis Pers. (V)
Puccinia sporoboli Arth. (V)

Capillipedium (Andropogoneae):

- Puccinia cesatii* Schroet. (VII)
Puccinia erythraeensis Paz. (Host?) (II)
Puccinia miyoshiana Diet. (VII)
Puccinia pusilla Syd. (I)
Puccinia versicolor Diet. et Holw. (VI)

Catabrosa (Festuceae):

- Puccinia glumarum* (Schmidt) Eriks. et Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia poae-nemoralis Otth (II)
Puccinia striiformis West. (VI)

Cenchrus (Paniceae):

- Puccinia cenchri* Diet. et Holw. (V)

- Puccinia cenchri* var. *africana* Cum. (V)
Puccinia pseudophakopsora Speg. (not a rust)
Uredo cenchricola P. Henn. (= *P. cenchri* var. *africana*)
Uredo cenchrophila Speg. (= *P. cenchri*)

Centotheca (Festuceae):

- Diorchidium levigatum* Syd. et Butl. (probably error for *P. lophatheri*)
Puccinia lophatheri (Syd.) Hirat. (V)

Chaetium (Paniceae):

- Puccinia chaetii* Kern et Thurston (V)

Chamaeraphis, see Pseudoraphis

Chaetochloa, see Setaria

Chascolytrum (Festuceae):

- Uredo chascolytri* Diet. et Neger (VIII)

Chimobambusa (Bambuseae):

- Stereostratum corticioides* (Berk. et Br.) Magn. (V)

Chloridion, see Stereochlaena

Chloris (Chlorideae):

- Puccinia cacabata* Arth. et Holw. (V)
Puccinia chloridicola P. Henn. (= *P. dietelii*)
Puccinia chloridina Bacc. (= *P. dietelii*)
Puccinia chloridis Speg. (VI)
Puccinia chloridis-incompletae T.S. Ramak., Srinivasan et Sundaram
 (= *P. enteropogonis*)
Puccinia dietelii Sacc. et Syd. (VI)
Puccinia enteropogonis Syd. (II)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)
Puccinia graminis Pers. (V)
Puccinia striiformis West. (VI)
Uredo chloridis-berroi Speg. (= *P. cacabata*)
Uredo chloridis-polydactylidis Viegas (= *P. cacabata*)
Uromyces archerianus Arth. et Fromme (VII)
Uromyces chloridis Doidge (= *U. archerianus*)
Uromyces kenyensis Hennen (VI)

Chrysopogon (Andropogoneae):

- Puccinia chrysopogi* Barclay (VI)
Puccinia kawandensis Cum. (V)
Puccinia omnivora Ell. et Ev. (= *P. virgata* on *Sorghastrum*)
Puccinia pseudocesatii Cum. (VII)

Cinna (Agrostideae):

- Puccinia coronata* Cda. (II, VI)
Puccinia glumarum (Schmidt.) Eriks. et E. Henn. (= *P. striiformis*)
Puccinia graminis Pers. (V)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (= *P. recondita*)
Puccinia striiformis West. (VI)

Cleistogenes, see Molinia

Coix (Tripsaceae):

- Puccinia operta* Mundk. et Thirum. (I)
Uredo operta Syd. et Butl. (= *P. operta*)

Coleanthus (Agrostideae):

- Puccinia graminis* Pers. (V)
Uredo coleanthi Hariot (= *P. graminis*)

Colpodium (Festuceae):

- Puccinia recondita* Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (= *P. recondita*)

Corynephorus (Aveneae):

Puccinia graminis Pers. (V)

Ctenium (Chlorideae):

Puccinia campulosae Theum. (doubtful record)

Uredo ctenii Wakef. et Hansf. (nomen nudum)Cymbopogon (Andropogoneae):

Puccinia andropogonicola Hariot et Pat. (I)

Puccinia citrata Syd. (=P. nakamishikii)

Puccinia cymbopogonis Mass. (VII)

Puccinia erittraeensis Paz.(Host?) (II) (P. erythraeensis)

Puccinia kaernbachii Arth. (uncertain identity)

Puccinia nakanishikii Diet. (I)

Puccinia purpurea Cke. (Host?) (II)

Puccinia versicolor Diet. et Holw. (VI)

Uredo cymbopogonis-polyneuri Petch (I)

Uredo schoenanthi P. Henn. (=Uromyces schoenanthi)

Uromyces clignyi Pat. et Hariot (VI)

Uromyces schoenanthi Syd. (V)

Cynodon (Chlorideae):

Puccinia coronata Cda. (Host?) (II, VI)

Puccinia cynodontis Desm. (VII)

Puccinia desmazieresii Const. (=P. moliniae?) (Host is probably Cleistogenes-Molinia)

Puccinia graminis Pers. (V)

Puccinia varians Diet. (=P. cynodontis)

Uredo cynodontis-dactylis Tai (I)

Cynosurus (Festuceae):

Puccinia coronata Cda. (II, VI)

Puccinia graminis Pers. (V)

Uromyces dactylidis Otth (VI)

Uromyces phyllachoroides P. Henn. (=U. dactylidis)Cypholepis (Festuceae):

Uromyces eragrostidis Tracy (VI)

Cyrtococcum (Paniceae):

Angiopsora clemensiae Arth. et Cumm. (II)

Puccinia taiwaniana Hirat. et Hash. (V)

Uromyces leptodermus Syd. (V)

Dactylis (Festuceae):

Puccinia coronata Cda. (II, VI)

Puccinia dactylidina Bub. (=P. recondita)Puccinia dactylidis Gaeum. (=P. graminis)Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)

Puccinia graminis Pers. (V)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (=P. recondita)

Puccinia striiformis West. (VI)

Uromyces dactylidis Otth (VI)

Dactyloctenium (Chlorideae):Puccinia dactyloctenii Pat. et Hariot (=P. dietelii)

Puccinia dietelii Sacc. et Syd. (VI)

Uredo dactyloctenii Speg. (=Uromyces dactyloctenii)

Uromyces dactyloctenii Wakef. et Hansf. (V)

Uromyces dactylocteniicola Lindq. (=U. dactyloctenii)Danthonia (Aveneae):

Puccinia graminis Pers. (V)

Uredo danthoniae P. Henn. (VIII)

Uromyces danthoniae McAlp. (VI)

Dendrocalamus (Bambuseae):

- Angiopsora divina Syd. (= Dasturella divina)
- Dasturella divina (Syd.) Mundk. et Kheswalla (I)
- Uredo dendrocalami Petch (II)
- Uredo ignava Arth. (I)

Deschampsia (Aveneae):

- Puccinia airae Cruch. et Mayor (= P. deschampsiae)
- Puccinia borealis Juel (= P. recondita)
- Puccinia connersii Savile (= P. praegracilis)
- Puccinia coronata Corda (II, VI)
- Puccinia deschampsiae Arth. (II)
- Puccinia graminis Pers. (V)
- Puccinia poae-sudeticae var. airae (Cruch. et Mayor) Arth. (= P. deschampsiae)
- Puccinia poarum Niels. (= error for P. deschampsiae)
- Puccinia praegracilis Arth. (VI)
- Puccinia recondita Rob. ex Desm. (VI)
- Uredo airae Lagh. (= P. deschampsiae)
- Uredo airae-flexuosae Liro (= Uromyces dactylidis)
- Uromyces airae-flexuosae Ferd. et Winge (= U. dactylidis)
- Uromyces dactylidis Otth (VI)
- Uromyces jacksonii Arth et Fromme (= U. mysticus)
- Uromyces mysticus Arth (VI)

Deyeuxia (Agrostideae): sect. of Calamagrostis

- Puccinia agrostidis Plowr. (= P. recondita)
- Puccinia coronata Cda. (II, VI)
- Puccinia deyeuxiae Tai et Cheo (= P. coronata)
- Puccinia elymi West. (= error for P. recondita)
- Puccinia graminis Pers. (V)
- Puccinia recondita Rob. ex Desm. (VI)
- Puccinia rangiferina Ito (= P. coronata)
- Puccinia rubigo-vera Wint. (= P. recondita)

Diarrhena (Festuceae):

- Puccinia diarrhenae Miy. et Ito (VI)
- Puccinia graminis Pers. (V)

Dichanthium (Andropogoneae):

- Puccinia cesatii Schroet. (VII)
- Puccinia duthiae Ell. et Tracy (I)
- Uredo susica Maire (VIII)
- Uromyces andropogonis-annulati Syd. et Butl. (= U. clignyi)
- Uromyces clignyi Pat. et Hariot (VI)

Dichelachne (Agrostideae):

- Puccinia graminis Pers. (V)
- Uredo crinitae Cunn. (II)

Digitaria (Paniceae):

- Angiopsora digitariae Cumm. (II)
- Melampsora syntherismae Saw. (= Angiopsora digitariae)
- Puccinia digitariae P. Evans (= P. oahuensis)
- Puccinia digitariae-velutinae Viennot-Bourgin (II)
- Puccinia kimurae Hirat. (= P. levis)
- Puccinia levis (Sacc. et Bizz.) Magn. (V)
- Puccinia oahuensis Ell. et Ev. (I)
- Uredo digitariae-ciliaris Mayor (= P. oahuensis)
- Uredo digitariaecola Thuem. (= P. oahuensis)
- Uredo paspali-longiflorae Petch (Host?) (VI)
- Uredo syntherismae (= P. oahuensis)
- Uredo tacita Arth. (VI)

- Uromyces panici-sanguinalis Rangel (=P. levis)
 Uromyces pegleriae P. Evans (VI)
Dimeria (Andropogoneae):
 Phakopsora incompleta (Syd.) Cumm. (II)
Diplachne (Festuceae): see also Molinia
 Puccinia autralis Koern. (VI)
 Puccinia diplachnicola Diet. (VI)
 Puccinia molinae Tul. (V)
 Puccinia permixta Syd. (VI)
Distichlis (Festuceae):
 Puccinia aristidae Tracy (VII, VIII)
 Puccinia subnitens Diet. (=P. aristidae?)
 Puccinia thalassica Speg. (=P. aristidae?)
 Uromyces peckianus Farl. (VIII)
Eatonia, see Sphenopholis
Eccoilopus (Andropogoneae):
 Puccinia miyoshiana Diet. (VII)
Echinochloa (Paniceae):
 Puccinia abnormis P. Henn. (=P. flaccida)
 Puccinia flaccida Berk. et Br. (VI)
 Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
 Puccinia graminis Pers. (V)
 Puccinia striiformis West. (Host?) (VI)
 Puccinia subdiorchidioides Speg. (=P. flaccida)
 Puccinia vilis Arth. (=P. graminis)
Echinopogon (Agrostideae):
 Puccinia graminis Pers. (V)
Ehrharta (Phalarideae):
 Uredo ehrhartae-calycinae Doidge (VI)
 Uromyces ehrhartae McAlp. (VI)
 Uromyces ehrhartae-giganteae Doidge (IX)
Eleusine (Chlorideae):
 Uredo eleusines-indicae Saw. (=P. cynodontis on Cynodon)
Elymus (Hordeae):
 Puccinia actaeae-elymi Mayor (=P. recondita)
 Puccinia coronata Cda. (II, VI)
 Puccinia elymi West. (VI)
 Puccinia elymicola Const. (=P. recondita)
 Puccinia elymina Miura (=P. graminis)
 Puccinia elymi-sibiricae Ito (=P. recondita)
 Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
 Puccinia graminis Pers. (V)
 Puccinia hepaticae-elymi Mayor (=P. recondita)
 Puccinia impatientis Arth. (=P. recondita)
 Puccinia montanensis Ell. (II)
 Puccinia pattersoniana Arth. (VI)
 Puccinia procera Diet. et Holw. (=P. recondita)
 Puccinia recondita Rob. ex Desm. (VI)
 Puccinia rubigo-vera Wint. (=P. recondita)
 Puccinia striiformis West. (VI)
 Puccinia triarticulata Berk. et Curt. (=P. elymi)
 Rostrupia elymi (West.) Lagh. (=P. elymi)
 Rostrupia elymi-sabulosi O. Savu. et T. Savu. (=P. elymi)
 Uredo elymi capitis-medusae Gonz. Frag. (=P. glumarum?)
Enteropogon (Chlorideae):
 Puccinia enteropogonis Syd. (II)
 Uromyces archerianus Arth. et Fromme (VII)

Entolasia (Paniceae):

Puccinia levis (Sacc. et Bizz.) Magn. (V)

Epicampes, see MuhlenbergiaEragrostis (Festuceae):

Angiopsora hiratsukae Syd. (II)

Puccinia emaculata Schw.? (= *P. eragrostidis-ferrugineae*?)

Puccinia eragrostidicola Kern, Thurston et Whet. (II)

Puccinia eragrostidis Petch (VI)

Puccinia eragrostidis-arundinaceae Tranz. et Eremeeva (VII)

Puccinia eragrostidis-chalcanthae Doidge (= *P. pogonarthrae*)

Puccinia eragrostidis-ferrugineae Tai (VI)

Puccinia eragrostidis-superbae Doidge (I)

Puccinia morigera Cummm. (VIII)

Puccinia pogonarthrae Hopk. (VI)

Uredo kigesiensis Cummm. (VI)

Uromyces eragrostidis Tracy (VI)

Uromyces pedicellata P. Evans (= *U. eragrostidis*)

Eremopogon (Andropogoneae):

Uromyces clignyi Pat. et Hariot (VI)

Erianthus (Andropogoneae):

Puccinia daniloi Bub. (VII)

Puccinia erianthi Padw. et Khan (I)

Puccinia erianthicola Cummm. (V)

Puccinia erythropus Diet. (Host?) (V)

Puccinia eulaliae Barclay (= *P. erianthi*)

Puccinia microspora Diet. (I)

Puccinia polysora Underw. (Host?) (V)

Puccinia purpurea Cke. (Host?) (II)

Puccinia virgata Ell. et Ev. (I)

Uredo fragosoana Cab. (= *U. ravennae*)

Uredo ravennae Maire (V)

Eriochloa (Paniceae):

Uredo eriochloana Sacc. et Trott. (= *Uromyces leptodermus*)

Uromyces eriochloae Syd. et Butl. (= *U. leptodermus*)

Uromyces leptodermus Syd. (V)

Euchlaena (Tripsaceae):

Angiopsora pallescens (Arth.) Mains (VI)

Puccinia pallescens Arth. (= *Angiopsora pallescens*)

Puccinia polysora Underw. (V)

Puccinia sorghi Schw. (V)

Eulalia (Andropogoneae):

Phakopsora incompleta (Syd.) Cummm. (II)

Puccinia phaeopoda Syd. (IX)

Puccinia pollinae-quadrinervis Diet. (VIII)

Uredo eulaliae-fulvae Cummm. (I)

Uredo morobeana Cummm. (V)

Uredo pollinae-imberbis Ito (= *Phakopsora incompleta*)

Uromyces apludae Syd. et Butl. (V)

Uromyces polytriadicola Arth. et Cummm. (= *U. schoenanthi*)

Uromyces schoenanthi Syd. (V)

Exothea (Andropogoneae):

Phakopsora incompleta (Syd.) Cummm. (II)

Uredo exothecae Wakef. et Hansf. (nomen nudum)

Uromyces clignyi Pat. et Hariot (VI)

Festuca (Festuceae):

Puccinia aconiti-rubrae Ludi (= *P. recondita*)

- Puccinia cockerelliana* Bethel (=P. recondita)
Puccinia corniculata Mayor et Viennot-Bourgin (=P. coronata)
Puccinia coronata Cda. (II, VI)
Puccinia coronifera Kleb. (=P. coronata)
Puccinia crandallii Pam. et Hume (VI)
Puccinia festucae Plowr. (VI)
Puccinia festucae-ovinae Tai (IX)
Puccinia festucina Syd. (=P. sessilis?)
Puccinia gibberosa Lagh. (=P. coronata)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia himalayensis (Barcl.) Diet. (=P. coronata)
Puccinia mellea Diet. et Neger (=P. recondita)
Puccinia petasiti-pulchellae Ludi (=P. poarum)
Puccinia piperii Ricker (VI)
Puccinia poae-nemoralis Otth (II)
Puccinia poarum Niels. (VI)
Puccinia pseudomyuri Kleb. (=P. schismi?)
Puccinia pygmaea Eriks. (II)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia sessilis Schneid. (VI)
Puccinia schismi Bub. (VI)
Puccinia scillae-rubri Ludi (VI)
Puccinia smilacearum-festucae Mayor (=P. sessilis)
Puccinia striiformis West. (VI)
Puccinia vulpiae-myuri Mayor et Viennot-Bourgin (=P. schismi)
Puccinia vulpiana Guyot (=P. schismi)
Uredo festucae DC. (=P. festucae?)
Uredo festucae-hallerii Cruch. (=P. poae-nemoralis)
Uredo festucae-ovinae Eriks. (=Uromyces dactylidis)
Uredo kergulensis P. Henn. (IV)
Uromyces cuspidatus Wint. (IX)
Uromyces dactylidis Otth (VI)
Uromyces festucae Syd. (=U. dactylidis)
Uromyces festucae-nigricantis Gonz. Frag. (=U. dactylidis)
Uromyces fuegianus Speg. (VI)
Uromyces hordeinus (Arth.) Arth. (VI)
Uromyces jacksonii Arth. et Fromme (=U. mysticus)
Uromyces mysticus Arth. (VI)
Uromyces ranunculi-festucae Jaap (=U. dactylidis)
Uromyces vulpiae Camara (=U. dactylidis)
Uromyces vulpiae Losa Espana (=U. dactylidis)

Fluminea, see Scolochloa

Garnotia (Agrostideae):

- Puccinia garnotiae* T.S. Ramak. et Sundaram (VI?)

Gastridium (Agrostideae):

- Puccinia graminis* Pers. (V)

Gaudinia (Aveneae):

- Puccinia gaudineana* Guyot (=P. schismi)
Puccinia graminis Pers. (V)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia schismi Bub. (VI)

Glyceria (Festuceae):

- Puccinia coronata* Cda. (II, VI)

Puccinia coronifera Kleb. (=P. coronata)
Puccinia glyceriae Ito (=P. recondita)
Puccinia graminis Pers. (V)
Puccinia paniculariae Arth. (P. coronata)
Puccinia poae-nemoralis Otth (II)
Puccinia recondita Rob. ex Deam. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Uredo glyceriae Lind (=P. poae-nemoralis)
Uredo glyceriae Opiz (=no rust)
Uredo glyceriae-distantis Eriks. (=P. poae-nemoralis)
Uromyces amphidymus Syd. (VI)
Uromyces glyceriae Arth. (=U. amphidymus)

Gouinia (Chlorideae):

Puccinia chichinensis Mains (=P. guaranitica)
Puccinia guaranitica Speg. (VI)

Gymnopogon (Chlorideae):

Puccinia boutelouae (Jennings) Holw. (VI)
Puccinia gymnopogonis Syd. (=P. boutelouae)
Puccinia gymnopogonicola Hennen (VI)

Gymnothrix, see Pennisetum

Hackelochloa (Andropogoneae):

Puccinia cacao McAlp. (I)
Puccinia levis (Sacc. et Bizz.) Magn. (host is Manisurus)
Puccinia pappiana Syd. (I)

Haynaldia (Hordeae):

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia haynaldiae Mayor et Viennot-Bourgin (=P. recondita)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia striiformis West. (VI)

Helictotrichum (Aveneae):

Puccinia coronata Cda. (II, VI)
Puccinia graminis Pers. (V)

Hemarthria (Andropogoneae):

Puccinia cacao McAlp. (I)
Puccinia microspora Diet. (I)
Puccinia rottboelliae Syd. (Host?) (V)
Uredo mira Cumm. (=P. cacao)
Uredo rottboelliae Diet. (=P. cacao)
Uromyces andropogonis-annulati Syd. et Butl. (=U. clignyi)
Uromyces clignyi Pat. et Hariot (VI)

Hesperochloa (Festuceae):

Puccinia crandallii Pam. et Hume (VI)

Heteranthelium (Hordeae):

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia lineatula Bub. (=P. striiformis)
Puccinia striiformis West. (VI)

Heteropogon (Andropogoneae):

Puccinia cesatii Schroet. (f. heteropogonis Beltr. (VII)
Puccinia filipodia Cumm. (=P. versicolor)
Puccinia versicolor Diet. et Holw. (VI)

Hierochloa (Phalarideae):

Puccinia borealis Juel. (=P. recondita)
Puccinia coronata Cda. (II, VI)

- Puccinia graminis* Pers. (V)
Puccinia hierochloae Ito (=P. coronata)
Puccinia hierochloina Kleb. (=P. recondita)
Puccinia recondita Rob. ex Desm. (VI)
Uredo karetu Cunn. (IV)

Hilaria (Zoysieae):

- Puccinia aristidae* Tracy (VII, VIII)

Holcus (Aveneae):

- Puccinia coronata* Cda. (II, VI)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia coronifera Kleb. (=P. coronata)
Puccinia graminis Pers. (V)
Puccinia holcicola Guyot (=P. recondita)
Puccinia holcina Eriks. (=P. recondita)
Puccinia nakanishikii Diet. (Host?) (I)
Puccinia purpurea Cke. (Host?) (II)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia striiformis West. (VI)

Hordeum (Hordeae):

- Puccinia actaeae-elymi* Mayor (=P. recondita)
Puccinia anomala Rostr. (=P. hordei)
Puccinia brachypus Speg. (=P. recondita)
Puccinia coronata Cda. (II, VI)
Puccinia cryptica Arth. et Holw. (Doubtful identity) (VI)
Puccinia glumarum (Schmidt) Eriks. et Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia hordei Otth (VI)
Puccinia hordei Fckl. (=P. recondita)
Puccinia hordei-maritimi Guyot (=P. recondita)
Puccinia hordei-murini Buchw. (=P. recondita)
Puccinia hordeina Lavrov (VI)
Puccinia hordei-secalini Viennot-Bourgin (=P. recondita)
Puccinia lineatula Bub. (=P. striiformis)
Puccinia montanensis Ell. (II)
Puccinia poae-nemoralis Otth (II)
Puccinia pygmaea Eriks. (error for P. poae-nemoralis)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia simplex (Koern.) Eriks. et E. Henn. (=P. hordei)
Puccinia striiformis West. (VI)
Puccinia tornata Arth. et Holw. (VI)
Uromyces hordeastri Guyot (=U. musticus)
Uromyces hordei Tracy (=U. hordeinus)
Uromyces hordeinus (Arth.) Arth. (VI)
Uromyces jacksonii Arth. et Fromme (=U. mysticus)
Uromyces mysticus Arth. (VI)
Uromyces turcomanicum Katajev (VI)

Hyparrhenia (Andropogoneae):

- Puccinia andropogonicola* Hariot et Pat. (I)
Puccinia andropogonis-hirti Beltr. (II)
Puccinia eritraeensis Paz. (II) (P. erythraeensis)
Puccinia hyparrheniae Cumm. (V)

Puccinia hyparrheniicola Joerst. et Cum. (II)
Puccinia kaernbachii Arth. (= *P. posadensis*)
Puccinia posadensis Sacc. et Trott. (Host?) (I)
Puccinia rottboelliae Syd. (Host?) (V)
Puccinia versicolor Diet. et Holw. (VI)
Uromyces clignyi Hariot et Pat. (VI)

Hystrix (Hordeae):

Puccinia apocrypta Ell. et Tracy (= *P. recondita*)
Puccinia asperellae-japonicae Hara (IX)
Puccinia coronata Cda. (II, VI)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)
Puccinia graminis Pers. (V)
Puccinia kiusiana Hirat. (V)
Puccinia montanensis Ell. (II)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (= *P. recondita*)
Puccinia striiformis West. (VI)

Ichnanthus (Paniceae):

Puccinia ichnanthi Mains (V)
Puccinia inclita Arth. (V)

Imperata (Andropogoneae):

Puccinia fragosoana Beltr. (I)
Puccinia imperatae Beltr. (= *P. imperatae*)
Puccinia imperatae Doidge (= *P. imperatae*)
Puccinia imperatae Poirault (V)
Puccinia kaernbachii Arth. (error for *P. microspora*)
Puccinia microspora Diet. (I)
Puccinia miscanthi Miura (Host?) (I)
Puccinia rufipes Diet. (I)
Uredo imperatae Magn. (= *P. imperatae*)

Isachne (Paniceae):

Puccinia isachnes Petch (I)
Puccinia kunthiana T.S. Ramak., Srinivasan et Sundaram (= *P. isachnes*)
Puccinia sublesta Cum. (I)
Uredo isachnes Saw. (VII)
Uredo martynii Dale (VI?)
Uromyces isachnes Petch (= *P. isachnes*)

Ischaemum (Andropogoneae):

Melampsora syntherismae Saw. p.p. (= *Phakopsora incompleta*)
Phakopsora incompleta (Syd.) Cum. (II)
Puccinia citrata Syd. (= *P. nakanishikii*) (Host?)
Puccinia incompleta Syd. (= *Phakopsora incompleta*)
Puccinia ischaemi Diet. (= *P. zoysiae* on *Zoysia*)
Puccinia versicolor Diet. et Holw. (VI)
Uredo ischaemi Syd. et Butl. (VI)
Uredo ischaemi-ciliaris Petch (II)
Uredo ischaemi-commutati Petch (= *U. ischaemi-ciliaris*)
Uromyces leptodermis Syd. (Host?) (V)

Ischurochloa (Bambuseae):

Dasturella divina (Syd.) Mundk. et Kheswalla (I)

Ixophorus (Paniceae):

Uromyces puttemansii Rangel? (I)

Koeleria (Aveneae):

Puccinia conspicua Mains (VI)
Puccinia coronata Cda. (II, VI)

- Puccinia fragosii* Bub. (=P. schismi)
Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
Puccinia graminis Pers. (V)
Puccinia koeleriae Arth. (II)
Puccinia koeleriae Politis (=P. schismi)
Puccinia koeleriicola Tranz. (VI)
Puccinia liatridis Bethel (VI)
Puccinia longissima Schroet. (VI)
Puccinia monoica Arth. (VI)
Puccinia paliformis Fckl. (Host?-maybe Carex)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia scarlensis Gaeum. (=P. recondita)
Puccinia schismi Bub. (VI)
Puccinia striiformis West. (VI)
Puccinia thalictri-koeleriae Gaeum. (=P. recondita)
Puccinia stipae Arth. (VI)

Lagurus (Agrostideae):

- Puccinia coronata* Cda. (II, VI)
Puccinia graminis (V)
Puccinia laguri Jaap (=P. schismi)
Puccinia laguri-chamaemoly Maire (=P. schismi)
Puccinia schismi Bub. (VI)

Lamarckia (Festuceae):

- Puccinia coronata* Cda. (II, VI)
Puccinia graminis Pers. (V)
Puccinia poae-nemoralis Otth (II)
Uredo lamarckiae Kleb. (=P. poae-nemoralis)
Uredo lamarckiae Cab. et Gonz-Frag. (=P. poae-nemoralis)

Lasiagrostis, see Stipa

Lasiacis (Paniceae):

- Angiopsora lenticularis* Mains (VI)
Puccinia lasiacidis Kern (V)
Uromyces costaricensis Syd. (V)

Leersia (Oryzeae):

- Puccinia ekmanii* Kern, Cif., et Thurston (I)
Puccinia fushunensis Hara (IX)
Puccinia graminis Pers. (V)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Uromyces halstedii De T. (I)

Leleba (Bambuseae):

- Dasturella divinia* (Syd.) Mundk. et Kheswalla (I)
Stereostylum corticioides (Berk. et Br.) Magn. (V)

Leptochloa (Chlorideae):

- Puccinia bartholomaei* Diet. (=P. chloridis)
Puccinia chloridis Speg. (VI)
Puccinia leptochloae Arth. et Fromme (VIII)
Puccinia subtilipes Speg. (VI)
Uromyces archerianus Arth. et Fromme (VII)
Uromyces leptochloae Wakef. (VI)

Leptoloma (Paniceae):

- Puccinia atra* Diet. et Holw. (VII)
Puccinia imposita Arth. (V)

Lepturus (Hordeae):

Puccinia lepturi Hirat. (VI)

Limnodea (Agrostideae):

Puccinia coronata Cda. (II, VI)

Puccinia graminis Pers. (V)

Puccinia schedonnardi Kell. et Swing. (VI)

Lolium (Hordeae):

Puccinia brachypus Speg. (var. *loliiphila* Speg.) (=P. *schismi*)

Puccinia coronata Cda. (II, VI)

Puccinia coronifera Kleb. (=P. *coronata*)

Puccinia cryptica Arth. and Holw. (=error)

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. *striiformis*)

Puccinia graminis Pers. (V)

Puccinia lolii Niels. (=P. *coronata*)

Puccinia loliicola Viennot-Bourgin (=P. *schismi*)

Puccinia loliina Syd. (=P. *schismi*)

Puccinia montanensis Ell. (II)

Puccinia poae-nemoralis Otth (II)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia schismi Bub. (VI)

Puccinia striiformis West. (VI)

Lophatherum (Festuceae):

Puccinia lophatheri (Syd.) Hirat. (V)

Uredo lophatheri Petch (IX)

Loudetia (Aveneae)

Phakopsora loudetiae Cumm. (II)

Puccinia loudetiae Wakef. et Hansf. (I)

Puccinia loudetiae-superbae Cumm. (I)

Lycurus (Agrostideae):

Puccinia schedonnardi Kell. et Swing. (VI)

Lygeum (Oryzeae):

Uromyces lygei Syd. (=U. *dactylidis*)

Uromyces dactylidis Otth (VI)

Manisuris (Paniceae)

Puccinia levis (Sacc. et Bizz.) Magn. (V)

Melica (Festuceae):

Puccinia coronata Cda. (II, VI)

Puccinia erikssoni Bub. (=P. *coronata*)

Puccinia graminis Pers. (V)

Puccinia heimerliana Bub. (VI?)

Puccinia melicae (Eriks.) Syd. (=P. *coronata*)

Puccinia melicina Arth. and Holw. (VI)

Puccinia montanensis Ell. (error for P. *poae-nemoralis*)

Puccinia paradoxica Ricker (II)

Puccinia petasiti-melicae Gaeum. (=P. *poarum*)

Puccinia poae-nemoralis Otth (II)

Puccinia poarum Niels. (VI)

Puccinia pygmaea Eriks. (error for P. *poae-nemoralis*)

Puccinia rangiferina Ito (=P. *coronata*)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (=P. *recondita*)

Puccinia schedonnardi Kell. et Swing. (VI)

Puccinia trebouii Syd. (=P. *heimerliana*)

Uredo jozankensis Ito (=Puccinia *coronata*)

Uromyces cuspidatus Wint. (=error for *U. graminis*)

Uromyces graminis (Niessl) Diet. (VI)

Uromyces graminis-ferulae Maire (= *U. graminis*)

Uromyces punicus Maire (= *U. graminis*)

Melinis (Melinideae):

Angiopsora hansfordii Cumm. (II)

Uredo melindis Kern (= *U. leptodermus*)

Uromyces leptodermus Syd. (V)

Microchloa (Chlorideae):

Uromyces microchloae Syd. (V)

Microlaena (Phalarideae):

Uromyces ehrhartae McAlp. (VI)

Microstegium (Andropogoneae):

Phakopsora incompleta (Syd.) Cumm. (II)

Puccinia aestivalis Diet. (I)

Puccinia benguetensis Syd. (I)

Puccinia microstegii Saw. (= *P. pollinae-imberbis*)

Puccinia pollinae Barclay (I)

Puccinia pollinae-imberbis Hirat. (I)

Puccinia polliniicola Syd. (V)

Uredo ogaoensis Cumm. (= *P. aestivalis*)

Uredo pollinae-imberbis Ito (= *Phakopsora incompleta*)

Milium (Agrostideae):

Puccinia coronata Cda. (II, VI)

Puccinia graminis Pers. (V)

Puccinia milii Eriks. (= *P. poae-nemoralis*)

Puccinia milii-effusi Dupais (= *P. recondita*)

Puccinia poae-nemoralis Otth (II)

Puccinia pygmaea Eriks. (error for *P. poae-nemoralis*)

Puccinia recondita Rob. ex Desm. (VI)

Uromyces adelphicus Syd. (= *U. dactylidis*)

Uromyces dactylidis Otth (VI)

Miscanthidium, see *Miscanthus*

Miscanthus (Andropogoneae):

Puccinia daisenensis Hirat. (I)

Puccinia erythropus Diet. (V)

Puccinia eulaliae Auth. not Barclay (= *P. miscanthi*)

Puccinia miscanthi Miura (I)

Puccinia miscanthicola Tai et Cheo (IX)

Puccinia miscanthicola Tranz. (= *P. miscanthi*)

Puccinia miscanthidii Doidge (V)

Uredo miscanthi-sinensis Saw. (IV)

Molinia (Festuceae):

Puccinia australis Koern. (VI)

Puccinia brunellarum-moliniae Cruch. (= *P. moliniae*)

Puccinia coronata Cda. (II, VI)

Puccinia graminis Pers. (V)

Puccinia moliniae Tul. (V)

Puccinia nemoralis Juel (= *P. moliniae*)

Puccinia moliniicola Cumm. (VI)

Moliniopsis (Festuceae):

Puccinia ishikariensis Ito (= *P. recondita*)

Puccinia moliniae Tul. (V)

Puccinia recondita Rob. ex Desm. (VI)

Monanthochloa (Festuceae):

Puccinia schedonnardi Kell. et Swing. (VI)

Monocymbium (Andropogoneae):

Puccinia versicolor Diet. et Holw. (VI)

Uromyces clignyi Pat. et Har. (VI)

Muhlenbergia (Agrostideae):

Puccinia dochmia Berk. et Curt. (VI)

Puccinia epicampis Arth. (VI)

Puccinia graminis Pers. (V)

Puccinia luxuriosa Syd. (VI)

Puccinia muhlenbergiae Arth. et Holw. (= *P. schedonnardi*)

Puccinia schedonnardi Kellerm. et Swing. (VI)

Puccinia sinica Syd. (VI)

Uromyces cuspidatus Wint. (error for *U. graminis*)

Uromyces epicampis Diet. et Holw. (VI)

Uromyces graminis (Niessl) Diet. (VI)

Uromyces ignobilis Arth. (error for *U. major*)

Uromyces major Arth. (V)

Uromyces minimus J.J. Davis (VI)

Uromyces muhlenbergiae Ito (V)

Nardurus (Festuceae):

Puccinia narduri Gonz. Frag. (= *P. recondita*)

Puccinia recondita Rob. ex Desm. (VI)

Nasella (Agrostideae):

Puccinia digna Arth. et Holw. (II)

Puccinia graminella Diet. et Holw. (IX)

Puccinia interveniens Bethel (IX)

Puccinia nasellae Arth. et Holw. (II)

Uromyces nasellae Cumm. (VI)

Uromyces penganus Arth. et Holw. (VI)

Neyraudia (Festuceae):

Puccinia neyraudiae Syd. (IX)

Ochlandia (Bambuseae):

Uredo ochlandiae Petch (II)

Olyra (Paniceae):

Angiopsora phakopsoroides (Arth. et Mains) Mains (II)

Puccinia bambusarum Arth. (V)

Puccinia belizensis Mains (V)

Puccinia deformata Berk. et Curt. (V)

Puccinia faceta Syd. (V)

Puccinia olyrae-latifoliae Viennot-Bourgin (V)

Puccinia phakopsoroides Arth. et Mains (= *Angiopsora phakopsoroides*)

Uredo detenta Mains (V)

Ophiurus (Andropogoneae):

Uredo ophiuri Syd. et Butl. (I)

Oplismenus (Paniceae):

Diorchidium levigatum Syd. et Butl. (= *P. levigata*)

Phakopsora oplismeni Cumm. (II)

Puccinia advena Syd. (V)

Puccinia inclita Arth. (V)

Puccinia levigata (Syd. et Butl.) Hirat. (V)

Puccinia levis (Sacc. et Bizz.) Magn. (V)

Puccinia opipara Cumm. (V)

Puccinia oplismeni Syd. (IX)

Uredo oplismeni Arth. et Cumm. (= *Phakopsora oplismeni*)
Uredo paspalicola P. Henn. (error for *P. inclita*)

Oryza (Oryzeae):

Puccinia graminis Pers. (V)
Uromyces coronatus Miy. et Nish. (Host?) (I)

Oryzopsis (Agrostideae):

Puccinia burnettii Griff. (V)
Puccinia coronata Cda. (II, VI)
Puccinia himalayensis (Barclay) Diet. (= *P. coronata*)
Puccinia micrantha Griff. (VI)
Puccinia oryzopsidis Syd. et Butl. (VI)
Puccinia piptatheri Lagerh. (VI)
Puccinia pygmaea Eriks.? (II)
Puccinia scaber (Ell. et Ev.) Barth. (= *P. substerilis*)
Puccinia stipae Arth. (VI)
Puccinia substerilis Ell. et Ev. (VI)

Ottochloa (Paniceae):

Angiopsora clemensiae Arth. et Cumm. (II)

Panicum (Paniceae):

Angiopsora aurea Cumm. (VI)
Angiopsora clemensiae Arth. et Cumm. (II)
Angiopsora lenticularis Mains (VI)
Diorchidium orientale Syd. et Butl. (= *P. orientalis*)
Puccinia atra Diet Holw. (VII)
Puccinia circumdata Mains. (I)
Puccinia coronata Cda. (Host?) (II, VI)
Puccinia emaculata Schw. (V)
Puccinia esclavensis Diet. et Holw. (= *P. atra*)
Puccinia flaccida Berk. et Br. (VI)
Puccinia goyazensis (P. Henn.) Syd. (= *P. levis*)
Puccinia graminis Pers. (V)
Puccinia huberii P. Henn. (V)
Puccinia insolita Syd. (V)
Puccinia levis (Sacc. et Bizz.) Magn. (V)
Puccinia millegranae Cumm. (V)
Puccinia negrensis P. Henn. (V)
Puccinia nyasaensis Cumm. (V)
Puccinia oahuensis Ell. and Ev. (Host?) (I)
Puccinia orientalis (Syd. et Butl.) Arth. et Cumm. (V)
Puccinia pangasinensis Syd. (non-valid; = *P. taiwaniana*?)
Puccinia panici Diet. (V)
Puccinia panici-montani Fujikuro (IX)
Puccinia panicophila Speg. (= *P. atra* on *Trichachne*)
Puccinia praecellens Syd. (= *P. subcentripora*)
Puccinia puttemansii P. Henn. (V)
Puccinia subcentripora Arth. et Cumm. (V)
Puccinia substriata Ell. et Barth. (V)
Puccinia taiwaniana Hirat. et Hash. (V)
Puccinia vilis Arth. (= *P. graminis* on *Echinochloa*)
Triphragmium graminicola Beeli (= a diorchidioid *Puccinia*) (V)
Uredo duplicate Rangel (= *P. oahuensis* on *Digitaria*)
Uredo henningsii Sacc. et Sacc. (V)
Uredo panici-maximi Rangel (= *Uromyces leptodermus*)
Uredo panici-montani Petch (V)

Uredo panicophila Speg. (= *Puccinia atra*?)
Uredo panici-plicati Saw. (V)
Uredo panici-urvilleana Diet. et Neg. (V)
Uredo panici-villosi Petch (IX)
Uredo rubigo-vera DC. (Host?)
Uredo syntherismae Speg. (= *Puccinia oahuensis* on *Digitaria*)
Uredo uromycoides Speg. (IX)
Uromyces costaricensis Syd. (Host?) (V)
Uromyces graminicola Burr. (V)
Uromyces leptodermys Syd. (V)
Uromyces linearis Berk. et Br. (V)
Uromyces niteroyensis Rangel (= *U. puttemansii*)
Uromyces panici Tracy (= *U. graminicola*)
Uromyces panici-sanguinalis Rangel (= *Puccinia levis*)
Uromyces puttemansii Rangel (I)
Uromyces sepultus Mains (= *U. puttemansii*)
Uromyces superfluus Syd. (VII)

Pappophorum (Festuceae):

Puccinia gymnotrichis P. Henn. (Error, see *P. pappophori*)
Puccinia pappophori Cum. (V)

Paspalidium (Paniceae):

Uromyces leptodermus Syd. (V)
Uromyces linearis Berk. et Br. (V)

Paspalum (Paniceae):

Angiopsora compressa Mains (II)
Puccinia araguata Kern (V)
Puccinia atra Diet. et Holw. (VII)
Puccinia chaetochloae Arth. (I)
Puccinia circumdata Mains (error for *P. dolosa*)
Puccinia compressa Arth. et Holw. (= *Angiopsora compressa*)
Puccinia coronata Cda. (Host?) (II, VI)
Puccinia dolosa Arth. et Fromme (I)
Puccinia dolosoides Cum. (V)
Puccinia emaculata Schw. (Host?) (V)
Puccinia levis (Sacc. et Trott.) Magn. (V)
Puccinia macra Arth. et Holw. (VI)
Puccinia maublanchii Rangel (= *P. chaetochloae*)
Puccinia paspali Tracy et Earle (= *P. levis*)
Puccinia paspalicola Arth. (= *P. substriata*)
Puccinia paspalicola Kern, Thurston, et Whet. (= *P. araguata*)
Puccinia paspalina Cum. (V)
Puccinia penniseti Zimm? (V)
Puccinia pilgeriana P. Henn. (= *P. substriata*)
Puccinia pseudoatra Cum. (VIII)
Puccinia substriata Ell. et Barth. (V)
Puccinia tubulosa Arth. (= *P. substriata*)
Uredo cubangoensis Rangel (= *Puccinia substriata*)
Uredo paraphysata Karst. (II)
Uredo paspali-longiflori Petch (VI)
Uredo paspalina Syd. (= *Puccinia paspalina*)
Uredo paspali-perrottetti Petch (V)
Uredo paspali-scribiculati Petch (I)
Uromyces aegopogonis Arth. et Holw. (Host?) (VI)
Uromyces paspalicola Arth. et Holw. (VI)

Penicillaria, see PennisetumPennisetum (Paniceae):

- Phakopsora apoda* (Hariot et Pat.) Mains. (II)
- Puccinia abnormis* P. Henn. (=P. flaccida)
- Puccinia apoda* Hariot et Pat. (=P. apoda)
- Puccinia atra* Diet. et Holw. (VII)
- Puccinia arthurii* Syd. (V)
- Puccinia burmeisterii* Speg. (=P. gymnotrichis)
- Puccinia cenchri* Diet. et Holw. (Host?) (V)
- Puccinia chaetochloae* Arth. (I)
- Puccinia flaccida* Berk. et Br. (Host?) (VI)
- Puccinia gymnotrichis* P. Henn. (V)
- Puccinia levis* (Sacc. et Bizz.) Magn. (V)
- Puccinia penicillaria* Speg. (V)
- Puccinia penniseti* Zimm. (V)
- Uromyces beckeropsidis* Castellani (V)

Perieilema (Agrostideae):

- Puccinia dochmia* Berk. et Curt. (VI)

Perotis (Zoysieae):

- Puccinia perotidis* Cumm. (VI)

Phacelurus (Andropogoneae):

- Puccinia miscanthi* Miura (I)
- Uromyces vossiae* Barclay (VII)

Phalaris (Phalarideae):

- Puccinia addita* Syd. (II)
- Puccinia angulosi-phalaridis* Poeverl. (=P. sessilis)
- Puccinia brevicornis* Ito (=P. coronata)
- Puccinia coronata* Cda. (II, VI)
- Puccinia digraphidis* Soppit (=P. sessilis)
- Puccinia glumarum* (Schmidt) Eriks. et E. Henn. (=P. striiformis)
- Puccinia graminis* Pers. (V)
- Puccinia orchidearum-phalaridis* Kleb. (=P. sessilis)
- Puccinia phalaridis* Plowr. (=P. sessilis)
- Puccinia schmidtiana* Diet. (=P. sessilis)
- Puccinia sessilis* Schneid. (VI)
- Puccinia striatula* Peck (=P. sessilis)
- Puccinia striiformis* West. (VI)
- Puccinia winteriana* Magn. (=P. sessilis)
- Rostrupia addita* (Syd.) Viennot-Bourgin (=P. addita)
- Uromyces phalaridicola* Katajev (VI?)

Phleum (Agrostideae):

- Puccinia coronata* Cda. (II, VI)
- Puccinia graminis* Pers. (V)
- Puccinia phlei-pratensis* Eriks. et E. Henn. (=P. graminis)
- Puccinia poae-nemoralis* Otth (II)
- Puccinia poarum* Niels. (VI)
- Puccinia taminensis* (=P. poarum)
- Uromyces dactylidis* Otth (VI)
- Uromyces phlei-michelii* Cruch. (=U. dactylidis)

Phragmites (Festuceae):

- Puccinia arundinacea* Hedw. f. (=P. phragmitis)
- Puccinia abei* Hirat. (IX)
- Puccinia alnetorum* Gaeum. (=P. magnusiana)
- Puccinia cagayanensis* Syd. (VII)

Puccinia inulae-phragmiticola Tranz. (V)
Puccinia invenusta Syd. (I)
Puccinia isiacae Wint. (V)
Puccinia longinqua Cumm. (V)
Puccinia magnusiana Koern. (II)
Puccinia moriokaensis Ito (I)
Puccinia obtusata (Oth) E. Fisch. (=P. isiacae)
Puccinia okatamaensis Ito (IX)
Puccinia phragmitis Koern. (V)
Puccinia simillima Arth. (=P. magnusiana)
Puccinia tepperii F. Ludwig (II)
Puccinia trabutii Roum. et Sacc. (=P. isiacae)
Puccinia trailii Plowr. (=P. phragmitis)
Uredo phragmites-karkae Saw. (VII)
Uromyces blandus Syd. (V)

Phyllostachys (Bambuseae):

Puccinia longicornis Pat. et Hariot (I)
Puccinia melanocephala Syd. (I) (Amer. coll. = P. phyllostachydis)
Puccinia phyllostachydis Kus. (I)
Stereostromum corticioides (Berk. et Br.) Magn. (V)

Piptatherum, see Oryzopsis

Piptochaetium (Agrostideae):

Puccinia graminella Diet. et Holw. (IX)
Puccinia piptochaetii Diet. et Neger (V)

Pleioblastus (Bambuseae):

Puccinia kusanooi Diet. (V)
Puccinia melanocephala Syd. (I)
Stereostromum corticioides (Berk. et Br.) Magn. (V)

Poa (Festuceae):

Puccinia agropyri-ciliaris Tai et Wei (VI)
Puccinia baldensis Gaeum. (=P. poarum)
Puccinia cognatella Bub. (=P. poae-nemoralis)
Puccinia coronata Cda. (II, VI)
Puccinia crandallii Pamm. et Hume (VI)
Puccinia epiphylla Wettst. (=P. poarum)
Puccinia exigua Syd. (II)
Puccinia graminis Pers. (V)
Puccinia persistens Plowr. (=P. recondita)
Puccinia petasiti-poarum Gaeum. et Eichh. (=P. poarum)
Puccinia petasiti-pulchellae Ludi (=P. poarum)
Puccinia poae-alpinae Eriks. (=P. poarum)
Puccinia poae-nemoralis Oth (II)
Puccinia poae-pratensis Miura (=P. coronata)
Puccinia poae-sudeticae Joerst. (=P. poae-nemoralis)
Puccinia poae-trivialis Bub. (=P. poarum)
Puccinia poarum Niels. (VI)
Puccinia recondita Rob. ex Desm. (VI)
Puccinia rubigo-vera Wint. (=P. recondita)
Puccinia subandina Speg. (=P. graminis?)
Puccinia thalictri-poarum E. Fisch. et Mayor (=P. recondita)
Uredo poiophila Speg. (IX)
Uromyces chubutensis Speg. (=U. fuegianus)
Uromyces dactylidis Oth (VI)
Uromyces fuegianus Speg. (VI)

- Uromyces otakou Cunn. (VI)
 Uromyces poae Rab. (=U. dactylidis)
 Uromyces poae-alpinae Rytz (=U. dactylidis)
Pogonarthria (Festuceae):
 Puccinia pogonarthriae J. Hopkins (VI)
 Uredo pogonarthriae Syd. (VI)
Pogonatherum (Andropogoneae):
 Puccinia pogonatheri Petch (I)
Pollinia, see Eulalia and Microstegium
 Puccinia eulaliae Barclay (=P. erianthi on Erianthus)
 Puccinia kimurai Hirat. et Yoshinaga (=P. levis on Digitaria)
Polypogon (Agrostideae):
 Puccinia coronata Cda. (II, VI)
 Puccinia graminis Pers. (V)
 Puccinia mediterranea Trott. (=P. coronata)
 Puccinia polypogonis Speg. (VI)
 Puccinia recondita Rob. ex Desm. (VI)
 Puccinia rubigo-vera Wint. (=P. recondita)
 Uredo polypogonis Speg. (=P. polypogonis)
Polytrias, see Eulalia
Pseudanthistiria (Andropogoneae):
 Uredo anthistiriae Petch (VI)
Pseudoraphis (Paniceae):
 Puccinia brachycarpa Syd. (I)
Pseudosasa (Bambuseae):
 Dasturella divina (Syd.) Mundk. et Kheswalla (I)
 Puccinia kusanonii Diet. (V)
 Puccinia longicornis Pat. et Hariot (I)
 Puccinia mitriformis Ito (IX)
Psilurus (Hordeae):
 Puccinia baudysii Picb. (=P. schismi?) (VI)
 Puccinia graminis Pers. (V)
Puccinellia (Festuceae):
 Puccinia cinerea Arth. (=P. recondita)
 Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)
 Puccinia graminis Pers. (V)
 Puccinia poae-nemoralis Otth (II)
 Puccinia recondita Rob. ex Desm. (VI)
 Puccinia rubigo-vera Wint. (=P. recondita)
 Puccinia striiformis West. (VI)
 Uredo atropidis-distantis Magn. (=Puccinia poae-nemoralis)
 Uromyces atropidis Tranz. (=U. dactylidis)
 Uromyces dactylidis Otth (VI)
Redfieldia (Festuceae):
 Puccinia redfieldiae Tracy (VII)
Relchella, see Calamagrostis
Reimarochloa (Paniceae):
 Puccinia levis (Sacc. et Bizz.) Magn. (V)
Rhynchelytrum (Paniceae):
 Diorchidium tricholaenae Syd. (=Puccinia levis)
 Puccinia levis (Sacc. et Bizz.) Magn. (V)
 Puccinia tricholaenae (Syd.) T.S. Ramak. et K. Ramak. (=P. levis)
 Uromyces tricholaenae Gonz. Frag. et Cif. (=Puccinia levis)

Roegneria, see Agropyron

Rottboellia (Andropogoneae):

- Puccinia cacao* McAlp. (Host?) (I)
- Puccinia microspora* Diet. (Host?) (I)
- Puccinia purpurea* Cke. (Host?) (II)
- Puccinia rottboelliae* Syd. (V)
- Uredo rottboelliae* Diet. (= *P. cacao*)
- Uredo tribulis* Cum. (V)
- Uromyces rottboelliae* Arth. (= *U. vossiae* on *Phacelurus*)

Saccharum (Andropogoneae):

- Puccinia eulaliae* Auth. no Barclay (= *P. erianthi*)
- Puccinia erianthi* Padw. et Khan (I)
- Puccinia kuehnii* Butl. (I)
- Puccinia miscanthi* Miura (Host?) (I)
- Puccinia purpurea* Cke. (Host?) (II)
- Puccinia sacchari* Patel, Kamat et Padhye (= *P. erianthi*)
- Uromyces kuehnii* Krueger (= *Puccinia kuehnii*)

Sacciolepis (Paniceae):

- Puccinia emaculata* Schw.? (V)

Sasa (Bambuseae):

- Angiopsora divina* Syd. (= *Dasturella divina*)
- Dasturella divina* (Syd.) Mund. et Kheswalla (I)
- Puccinia kusanonii* Diet. (V)
- Puccinia longicornis* Pat. et Hariot (I)
- Puccinia mitriformis* Ito (IX)
- Stereostrium corticioides* (Berk. et Br.) Magn. (V)
- Uredo inflexa* Ito (= *Dasturella divina*)

Sasaella (Bambuseae):

- Puccinia kusanonii* Diet. (V)

Sasamorpha (Bambuseae):

- Puccinia longicornis* Pat. et Hariot (I)
- Puccinia mitriformis* Ito (IX)
- Puccinia sasae* Kus. (I)
- Puccinia sasaecola* Hara (I)

Schedonnardus (Chlorideae):

- Puccinia schedonnardi* Kell. et Swing. (VI)

Schismus (Aveneae):

- Puccinia schismi* Bub. (VI)

Schizachne (Festuceae):

- P. coronata* Cda. (II, VI)

Schizachyrium, see Andropogon

Schizostachyum (Bambuseae):

- Puccinia ditissima* Syd. (II) (see under *Uredo*)

Sclerochloa (Festuceae):

- Puccinia coronata* Cda. (II, VI)
- Puccinia recondita* Rob. ex Desm. (VI)
- Puccinia rubigo-vera* Wint. (= *P. recondita*)
- Uredo sclerochloae* Hariot (= *Uromyces dactylidis*)
- Uromyces dactylidis* Oth (VI)
- Uromyces sclerochloae* Tranz. (= *U. dactylidis*)

Scleropoa (Festuceae):

- Uromyces dactylidis* Oth (VI)
- Uromyces scleropoeae* Baudys et Picb. (= *U. dactylidis*)

Scleropogon (Festuceae):

Puccinia aristidae Tracy (VII, VIII)

Sclerostachya (Andropogoneae):

Puccinia kuehnii Butl. (I)

Scolochloa (Festuceae):

Puccinia coronata Cda. (II, VI)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (=P. recondita)

Scribnera (Hordeae):

Uromyces hordeinus Arth. (VI)

Uromyces jacksonii Arth. et Fromme (=error for U. hordeinus)

Secale (Hordeae):

Puccinia clematidis-secalis Dupais (=P. recondita)

Puccinia coronata Cda. (II, VI)

Puccinia dispersa Eriks. et E. Henn. (=P. recondita)

Puccinia elymi West. (error for P. recondita)

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (=P. striiformis)

Puccinia graminis Pers. (V)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (=P. recondita)

Puccinia striiformis West. (VI)

Uromyces fragilipes Tranz. (VI)

Semiarundinaria (Bambuseae):

Puccinia kusanoii Diet. (V)

Stereostromum corticioides (Berk. et Br.) Magn. (V)

Sesleria (Festuceae):

Puccinia pumilae-coronata H. Paul (=P. coronata)

Puccinia sesleriae Reichardt (V)

Puccinia sesleriae-coeruleae E. Fisch. (=P. sesleriae)

Setaria (Paniceae):

Angiopsora cameliae (Mayor) Mains (II)

Phakopsora setariae Cumm. (II)

Puccinia atra Diet. et Holw. (VII)

Puccinia cameliae Arth. (=Angiopsora cameliae)

Puccinia catervaria Cumm. (I)

Puccinia chaetochloae Arth. (I)

Puccinia elgonensis Wakef. (V)

Puccinia graminis Pers.? (V)

Puccinia kigesiensis Wakef. et Hansf. (VII?)

Puccinia levis (Sacc. et Bizz.) Magn. (V)

Puccinia polysora Underw. (error)

Puccinia pseudophakopsora Speg. (=no rust)

Puccinia setariae Diet. et Holw. (VIII)

Puccinia setariae-longiseta Wakef. et Hansf. (V)

Puccinia setariae-viridis Diet. (=P. levis?) (V)

Puccinia substriata Ell. et Barth. (V)

Puccinia wiehei Cumm. (V)

Uredo palmifoliae Cumm. (II)

Uredo panici-plicati Saw. (V)

Uredo setariae Speg. (V)

Uredo setariae-onuri Diet. (IX)

Uromyces leptodermus Syd. (V)

Uromyces niteroyensis Rangel (=U. puttemansii)

Uromyces puttemansii Rangel (I)

Uromyces sepultus Mains (= *U. puttemansii*)

Uromyces setariae-italicae Yoshino (= *U. leptodermus*)

Sieglingia, see *Tridens*

Sinoarundinaria (Bambuseae):

Puccinia phyllostachydis Kus. (I)

Stereostratum corticioides (Berk. et Br.) Magn. (V)

Sitanion (Hordeae):

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)

Puccinia graminis Pers. (V)

Puccinia montanensis Ellis (II)

Puccinia pattersoniana Arth. (VI)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (= *P. recondita*)

Puccinia striiformis West. (VI)

Snowdenia (Arthropogoneae):

Uromyces snowdeniae Cumm. (VI)

Sorghastrum (Andropogoneae):

Puccinia virgata Ell. et Ev. (I)

Sorghum (Andropogoneae):

Puccinia eulaliae Auth. (Host?) (= *P. miscanthi*)

Puccinia jaagii Boed. (V)

Puccinia nakanishikii Diet. (Host?) (I)

Puccinia purpurea Cooke (II)

Puccinia sorghi-halepensis Pat. (= *P. purpurea*)

Uredo geniculata Cumm. (II)

Uromyces andropogonis Tracy (Host?) (VII)

Spartina (Chlorideae):

Puccinia distichlidis Ell. et Ev. (VI)

Puccinia fraxinata Arth. (= *P. sparganioides*)

Puccinia kelseyi Syd. (= *P. distichlidis*)

Puccinia peridermiospora Arth. (= *P. sparganioides*)

Puccinia seymouriana Arth. (V)

Puccinia sparganioides Ell. et Barth. (V)

Uredo spartinae-strictae Pat. et Hariot (= *Uromyces argutus*)

Uromyces acuminatus Arth. (VI)

Uromyces argutus Kern (V)

Uromyces spartinae Farl. (= *U. acuminatus*)

Sphenopholis (Aveneae):

Puccinia eatoniae Arth. (VI)

Puccinia graminis Pers. (V)

Spodiopogon (Andropogoneae):

Puccinia crassapicalis Bub. (VII)

Puccinia miyoshiana Diet. (VII)

Puccinia pachypes Syd. (II)

Puccinia rufipes Diet. (Host?) (I)

Sporobolus (Agrostideae):

Puccinia arundinellae-setosae Tai (I)

Puccinia cryptandri Ell. et Barth. (V)

Puccinia graminis Pers. (V)

Puccinia hibisciata Kell. (= *P. schedonnardi*)

Puccinia kakamariensis Wakef. et Hansf. (V)

Puccinia luxuriosa Syd. (VI)

Puccinia muhlenbergiae Arth. et Holw. (= *P. schedonnardi*)

Puccinia schedonnardi Kell. et Swing. (VI)

- Puccinia simulans* Pk. (=P. cryptandri)
Puccinia spegazziniella Sacc. et Trav. (=P. schedonnardi)
Puccinia sporoboli Arth. (V)
Puccinia subglobosa Speg. (=P. schedonnardi)
Puccinia sydowiana Diet. (=P. vilfae)
Puccinia tosta Arth. (=P. schedonnardi)
Puccinia vilfae Arth. et Holw. (V)
Puccinia verbeniicola Arth. (=P. vilfae)
Uredo egenula Arth. (V)
Uredo ignobilis Syd. (=Uromyces tenuicutis)
Uromyces ignobilis Arth. (=U. tenuicutis)
Uromyces sporoboli Ell. et Ev. (V)
Uromyces sporoboloides Cumm. (V)
Uromyces tenuicutis McAlp. (V)
Uromyces wellingtonica T.S. Ramak. et K. Ramak. (=U. tenuicutis)

Stapfiola (Festuceae):

- Puccinia stapfiolae* Mund. et Thirum. (=P. schismi?) (VI)

Stenotaphrum (Paniceae):

- Puccinia stenotaphri* Cumm. (I)
Uredo stenotaphri Syd. (=P. stenotaphri)
Uromyces ignobilis Arth. (doubtful, =U. leptodermus?)

Stereochlaena (Paniceae):

- Puccinia penniseti* Zimm.? (V)

Stipa (Agrostideae):

- Puccinia avocensis* Greene et Cumm. (IX)
Puccinia burnettii Griff. (V)
Puccinia coronata Cda. (II, VI)
Puccinia digna Arth. et Holw. (II)
Puccinia entrerriana Lindq. (V)
Puccinia flavescens McAlp. (VI)
Puccinia graminella Diet. et Holw. (IX)
Puccinia graminis Pers. (V)
Puccinia hierochloae Ito (=P. coronata)
Puccinia interveniens Bethel (IX)
Puccinia lasiagrostis Tranz. (VI)
Puccinia monoica Arth. (VI)
Puccinia nasellae Arth. et Holw. (II)
Puccinia oerteliana Tranz. (=P. stipina)
Puccinia oligocarpa Syd. et Butl. (II) (Host not Stipa; may be Calamagrostis)
Puccinia saltensis Cumm. (II)
Puccinia scaber (Ell. et Ev.) Barth. (=P. substerilis)
Puccinia stipae Arth. (VI)
Puccinia stipae Hora (=P. stipina)
Puccinia stipae-sibiricae Ito (VI)
Puccinia stipicida Speg. (=P. interveniens)
Puccinia stipicola Speg. (=P. interveniens)
Puccinia stipina Tranz. (VI)
Puccinia substerilis Ell. et Ev. (VI)
Puccinia windsoriae Schw. (Host?) (VIII)
Puccinia wolgensis Nawashin (IX)
Uredo pencana Diet. et Neger (=Uromyces pencanus)
Uredo stipae Jacz. (IX)
Uromyces argentinus Speg. (=Puccinia cacao on Hemarthria)

Uromyces ferganensis Tranz. et Eremeeva (VI?)

Uromyces mussooriensis Syd. (VIII)

Uromyces pencanus Arth. et Holw. (VI)

Uromyces stipinus Tranz. et Eremeeva (IX)

Syntherisma, see Digitaria

Tetrarrhena (Phalarideae):

Uromyces ehrhartae McAlp. (VI)

Themeda (Andropogoneae):

Phakopsora incompleta (Syd.) Cumm. (II)

Puccinia burmanica Syd. et Butl. (=P. chrysopogi)

Puccinia chrysopogi Barclay (VI)

Puccinia themedae Hirat. (=P. versicolor)

Puccinia versicolor Diet. et Holw. (VI)

Uredo anthistiriae-tremulae Petch (IV)

Uredo themedae Diet. (=Puccinia versicolor)

Uredo themedicola Cumm. (=Uromyces clignyi)

Uromyces clignyi Pat. & Har. (VI)

Uromyces triandrae Ramak. T.S. et Sriniv. (=U. clignyi)

Thraysia (Paniceae):

Puccinia levis (Sacc. et Bizz.) Magn. (V)

Torresia, see Hierochloa

Trachynia, see Brachypodium

Trachypogon (Andropogoneae):

Puccinia eritraeensis Paz. (II) (P. erythraeensis)

Puccinia trachypogonis Speg. (=P. versicolor)

Puccinia versicolor Diet. et Holw. (VI)

Tragus (Zoysieae):

Uromyces tragi Wakef. et Hansf. (VI)

Trichachne (Paniceae):

Puccinia atra Diet. et Holw. (VII)

?*Puccinia melanosora* Speg. (=rust of Acicarpa)

Puccinia panicophila Speg. (=P. atra)

Puccinia substriata Ell. et Barth. (V)

Tricholaena, see Rhynchelytrum

Trichloris (Chlorideae):

Puccinia chloridis Speg. (VI)

Puccinia trichloridis Speg. (=P. chloridis)

Trichoneura (Chlorideae):

Uromyces trichoneurae Doidge (V)

Tricuspis, see Gouinia

Trichopteryx, see Loudetia

Tridens (Festuceae):

Puccinia cryptandri Ell. et Barth. (V)

Puccinia graminis Pers. (V)

Puccinia simulans (Pk.) Arth. (=P. cryptandri)

Puccinia triodiae Ell. et Barth. (=P. windsoriae)

Puccinia windsoriae Schw. (VIII)

Triniochloa:

Uredo triniochloae Arth. et Holw. (II)

Triodia, see Tridens

Triplacis (Festuceae):

Puccinia schedonnardi Kell. et Swing. (VI)

Tripogon (Chlorideae):

Uromyces trichoneurae Doidge (V)

Uromyces tripogonicola Payak et Thirum. (= *U. trichoneurae*)

Tripsacum (Tripsaceae):

Angiopsora pallescens (Arth.) Mains (VI)

Puccinia pallescens Arth. (= *Angiopsora pallescens*)

Puccinia pattersoniae Syd. (= *P. tripsaci*?)

Puccinia polysora Underw. (V)

Puccinia tripsaci Diet. et Holw. (V)

Puccinia tripsacicola Cum. (IX)

Uredo pallida Diet. et Holw. (= *Angiopsora pallescens*)

Uromyces tripsaci Kern et Thurst. (= *Puccinia tripsacicola*?)

Trisetum (Aveneae):

Puccinia austrorussuriansis Tranz. (VI)

Puccinia borealis Juel (error for *P. poae-nemoralis*)

Puccinia coronata Cda. (II, VI)

Puccinia distichophylli E. Fisch. (II)

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)

Puccinia graminis Pers. (V)

Puccinia leptospora Ricker (VI)

Puccinia monoica Arth. (VI)

Puccinia poae-nemoralis Otth (II)

Puccinia poae-sudeticae Joerst. (= *P. poae-nemoralis*)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (= *P. recondita*)

Puccinia striiformis West. (VI)

Puccinia thalyctri-distichophylli E. Fisch. et Mayor (= *P. recondita*)

Puccinia triseti Eriks. (= *P. recondita*)

Puccinia triseticola Tranz. (V)

Uromyces dactylidis Otth (VI)

Uromyces ranunculi-distichophylli Semadeni (= *U. dactylidis*)

Uromyces triseti Katajev (= *U. dactylidis*)

Uromyces volkarti Gaeum. et Terrier (= *U. dactylidis*)

Tristachya (Aveneae):

Puccinia tristachyae Doidge (I)

Triticum (Hordeae): (some records refer to *Agropyron*)

Puccinia actaeae-agropyri E. Fisch. (= *P. recondita*)

Puccinia agropyri Ell. et Ev. (= *P. recondita*)

Puccinia brachypus Speg. (= *P. recondita*)

Puccinia elymi West. (error for *P. recondita*)

Puccinia glumarum (Schmidt) Eriks. et E. Henn. (= *P. striiformis*)

Puccinia graminis Pers. (V)

Puccinia megalopotamica Speg. (= *P. graminis*)

Puccinia persistens Plowr. (= *P. recondita*)

Puccinia recondita Rob. ex Desm. (VI)

Puccinia rubigo-vera Wint. (= *P. recondita*)

Puccinia striiformis West. (VI)

Puccinia tritici-duri Viennot-Bourgin (= *P. recondita*)

Puccinia triticina Eriks. (= *P. recondita*)

Puccinia triticorum Speg. (= *P. recondita*)

Urochloa (Paniceae):

Uromyces leptodermus Syd. (V)

Valota, see Trichachne

Vossia, see Phacelurus

Vulpia, see Festuca

Weingaertneria, see Corynephorus

Zea (Tripsaceae):

Angiopsora zeae Mains (VI)

Puccinia maydis Bereng. (=P. sorghi)

Puccinia pallescens Arth. (error for *Angiopsora zeae*)

Puccinia polysora Underw. (V)

Puccinia sorghi Schw. (V)

Zeugites (Festuceae):

Uredo zeugitis Arth. et Holw. (V)

Zizania (Zizanieae):

Puccinia zizaniae Schw. (=P. *andropogonis* on *Andropogon*)

Uromyces coronatus Miyabe et Nish. (I)

Uromyces zizaniae-lalifoliae Saw. (=U. *coronatus*)

Zoysia (Zoysieae):

Puccinia ischaemi Diet. (=P. *zoysiae*)

Puccinia zoysiae Diet. (VI)

GROUP I: UREDIA PARAPHYSATE; UREDIOSPORES ECHINULATE; PORES EQUATORIAL

Species	Urediospores				Telia		Teliospores				Special		
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall	Apical Wall		Ped	Spore Size
ANGIOSPERA													
<i>aficana</i>	h-y	1.5	4	16-20x26-33	*			g-ch	2	2-3	0	10-16x20-26	
DASTURELLA													
<i>bambusina</i>	y	?	2	17-21x22-29	*			ci-ch	1.5?	5-9	0	11-17x(14-18?)	
<i>divina</i>	y-g	1.5	3-4	16-23x22-33	*			ch	1-1.5	4-11	0	10-17x12-15	
PUCCINIA													
<i>aestivalis</i>	ci	1.5	3-4	18-21x20-25	*			g	2	4-8	25	11-16x29-40	III spores germinating, II par. capitae
<i>andropogonicola</i>	ci-ch	2	4-5	20-26x20-35	*			ch	2.5-3.5	9-12	70	22-27x40-56	II par. clavate-capitate
<i>apludae</i>	ci-ch	1.5	4	15-19x19-26	*			ch	2-2.5	3-5	80	20-26x36-43	II par. capitae
<i>arthroxonis-</i>													
<i>ciliaris</i>	y	1.5	4-5	18-23x23-30	*			ci-ch	1.5	3-5	20	20-25x38-48	II par. mostly clavate, incurv
<i>arundinellae-</i>													
<i>setosae</i>	ch	2-2.5	3-5	18-21x21-30	*			ch	1.5	2-4	20?	16-21x30-43	II par. clavate or capitae
<i>benguetensis</i>	ci	1.5	4-6	16-21x23-27	*			ch	1-1.5	2-3	25	16-19x29-34	II par. capitae
<i>brachycarpa</i>	g-ch	2.5-3.5	3-4	19-25x23-28	*			ch	1.5	1.5	30	17-24x24-33	III spores verruculose; lower pore depressed
<i>cacao</i>	ci-ch	2-2.5	3-4	23-29x32-40	*			ch	2-2.5	2-2.5	10	18-22x30-39	II par. very variable
<i>catervaria</i>	ci	1.5-2	4	19-24x24-29	*		*	ch	1-1.5	2-3.5	20	20-23x26-33	II par. cylindric-clavate; III spores mostly angular
<i>chaetochloae</i>	ci	2	3-4	22-27x30-38	*		*	ch	1.5	2-4	20	20-26x32-40	II par. cylindric, III spores mostly angular
<i>chaseana</i>	ci	1.5-2	4	20-25x25-30	*		*	ci-ch	1	3-6	15	16-21x33-43	II par. cylindric
<i>circumdata</i>	g-ci	1-1.5	3	19-24x23-32	*		*	ch	1-1.5	2-3	15	17-24x26-33	II par. cylindric-clavate, III spores angular, brittle
<i>daisenensis</i>	ci	1.5	4	19-23x26-33	*		*	ch	1.5-2	7-13	15	15-22x35-56	II par. capitae
<i>dolosa</i>	g-ci	1-1.5	3	16-20x19-25	*			ch	1-1.5	2-4	15	17-23x28-40	II par. cylindric, III spores angular, brittle
<i>duthiae</i>	ci-ch	1.5-2.5	5	18-23x26-32	*			ch	2.5-3	4-8	120	22-27x35-42	II par. capitae
<i>ekmani</i>	y	1	4	18-23x23-27	*			ch	2-3	3-5	80	18-23x29-39	II par. cylindric or clavate
<i>eragrostidis-</i>													
<i>superbae</i>	ci-ch	1.5-2	4-6	17-25x27-32	*			ch	3-4	5-9	140	23-30x36-45	II spore apex 2-3, par. clavate capitae
<i>erianthi</i>	ci	1.5	4-5	18-23x28-33	*			ch	1.5-2	3-4	12	17-21x30-43	II par. capitae
<i>fragosana</i>	g-ch	2	4-5	20-27x30-43	*			ch	2	2-3	50	18-23x26-34	II spore apex 3-8
<i>invenusta</i>	y-ci	1.5	4	14-18x20-29	*			g-ch	2	3-5	105	15-20x30-42	II par. clavate or capitae
<i>isachnes</i>	ci	1.5	4	16-19x23-37	*			ch	1.5-2	4-7	70	20-24x35-45	II par. capitae
<i>kuehni</i>	y-ci	1.5-2.5	4-5	17-26x30-43	*			y-g	1.5-2	1.5-2	15	10-18x25-40	II spore apex 3-5
<i>longicornis</i>	ci	3	3-4	24-33x28-36	*			g-ch	1.5-2	14-32	200	18-21x65-100	II par. clavate-capitate III spores verruculose
<i>loudetiae</i>	ci-ch	1.5-2	3	19-26x25-35	*			g-ch	1	1	30	13-18x28-42	II par. clavate or capitae
<i>loudetiae-superbae</i>	ch	1.5	3	17-21x21-28	*			ch	1.5-2.5	4-6	50	18-23x33-42	II par. capitae
<i>melanocephala</i>	ci	2-3	4	23-27x27-37	*			g-ch	1.5	2-3	65	18-24x41-58	II par. capitae
<i>microspora</i>	ci	1.5-2	4	16-21x23-27	*			ch	1.5	2-3	20	16-21x28-35	II par. capitae
<i>miscanthi</i>	ci	1.5-2	4-5	19-26x29-35	*			ch	1.5-2	4-6	12	16-23x40-60	II par. capitae
<i>miscanthiokensis</i>	y	1.5-2	5-6	14-19x26-30	*			ch	1.5-2.5	6-13	120	13-18x44-65	II par. cylindric-clavate

Species	Urediospores				Telia				Teliospores				Special
	Wall	Side	Walls	Pores	Spore Size	Nak	Cov	Par	Wall	Side	Apical	Ped	
	Color	Wall	Walls						Color	Wall	Wall		
<i>nakanishikii</i>	ci-ch	1.5-2.5		4-5	19-24x26-36	*			ch	2-3	4-8	65	II spore apex 2.5-3, par. clavate-capitate
<i>oahuensis</i>	ci	1.5		4-6	17-26x26-35	*	*	*	ch	1-2	3-6	15	II par. cylindric-clavate
<i>operta</i>	y-ci	1.5		4-6	18-28x22-36	*			ch	2.5-3.5	3-5	110	II spore apex 2-4.5, par. clavate or capitate
<i>pappiana</i>	ci	1.5-2		4	20-25x25-29	*			ch	2.5-3.5	5-10	85	II par. capitate
<i>phyllostachydis</i>	ci	2.5-3		4-5	21-25x24-33	*			ch	2-3	3-5	120	III spores verruculose
<i>pogonatheri</i>	ci-ch	2		5	19-23x25-30	*			ch	2-2.5	7-10	85	II par. capitate, septate
<i>pollinae</i>	y-ci	1-1.5		3-4	18-22x23-27	*			g-ch	1.5-2	4-7	70	II par. capitate; III spores germinating p.p.
<i>pollinae- inberbis</i>	ci	1.5-2		4-5	20-23x24-30	*			ch	1.5	2-4	40	II par. capitate
<i>posadensis</i>	ci-ch	1.5-2		4-5	19-25x28-33	*			ch	1.5-2	6-9	12	II par. capitate
<i>pusilla</i>	ci-ch	1.5-2		4	16-22x20-26	*			ch	1.5-2.5	2.5-5	65	II spore apex 2-2.5, par. capitate
<i>rufipes</i>	ci	2-2.5		4	18-25x27-33	*			ch	2.5-3	3-3.5	90	II spore apex 2.5-3, par. capitate
<i>sasae</i>	ci	3-3.5		5	32-35 diam.	*			ch?	2-3	2.5-3.5	?	III spores verruculose, II par. clavate-capitate
<i>sasaecola</i>	?	?		?	?	*			g	1.5-2.5	35-70	200	probably this group
<i>stenotaphri</i>	ci	1.5		4-5	25-28x30-40	*	*		ch	1.5	2.5-4	15	II par. cylindric
<i>subtecta</i>	ci	1.5-2		3-4	15-19x19-25	*			ch	2	3-3.5	20	II par. capitate
<i>tristachyae</i>	ci	2		5-7	21-30x28-34	*	?		g	1.5-2	2-3	45	II par. mostly capitate
<i>unica</i>	ci	1.5-2		4-5	18-23x23-28	*			ch	3-3.5	3-5	100	II par. mostly capitate
<i>virgata</i>	ch	2-3		3-6	20-27x31-40	*			ch	1.5-2	5-10	20	II par. clavate or capitate
UREDIO													
<i>arundinellae- nepalensis</i>	y-g	1-1.5		4-5	17-23x25-33								phakopsoroid
<i>arundinis- donacis</i>	y-ci	2		4	14-21x26-34								II spore apex 3-4, par. capitate
<i>cymbopogonis- polynuri</i>	ch	1.5-2		4	19-24x25-35								II par. capitate
<i>cynodontis- dactylidis</i>	ch	1.5-2		2	14-20x17-22								II par. cylindric-clavate
<i>eulaliae- fulvae</i>	y-g	1.5		5?	19-26x29-38								II spore apex 2-4, par. short, capitate
<i>ignava</i>	h-g	1-2		4?	14-19x23-27								phakopsoroid
<i>ophiuri</i>	ci-ch	1.5-2		2	23-28x28-40								II par. cylindric or clavate
<i>paspali- scrobiculati</i>	ch?	1.5-2		2	22-28x27-40								II spore apex 2-3
<i>schizachyrii</i>	ch	1.5-2		3	23-30x30-42								II spore apex 4-8
UROMYCES													
<i>coronatus</i>	g-ci	1.5-2		4-5	16-21x21-33	*			ch	1-1.5	4-13	50	coronate; II spore apex 3-4
<i>halstedii</i>	y-ci	1-1.5		3-4	16-21x22-28	*			g-ch	1-1.5	3-5	50	coronate
<i>puttemansii</i>	ci	1.5-2		3	20-27x29-38		*		ch	1	1.5-2.5	25	III spores often angular

GROUP II: UREDIA PARAPHYSATE; UREDIOSPORES ECHINULATE; PORES SCATTERED

Species	Urediospores				Telia			Teliospores				Special	
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall	Apical Wall	Ped		Spore Size
ANGIOSPERA													
camelliae	h-y	1-1.5	7-9	15-21x19-28	*	*	*	ch	1.5	4-8	0	10-15x16-28	pores may be equatorial
clenensiae	y	1-1.5	?	16-19x21-26	*	*	*	ci	1.5	2-3	0	10-15x16-29	
compressa	h-y	1-1.5	?	15-18x20-26	*	*	*	ch	1.5	3-4	0	12-14x20-32	
digitariae	h-y	1-1.5	?	15-20x21-26	*	*	*	g	1-2	1-2	0	9-11x20-25	telia 1 spore deep
hansfordii	h-y	1.5-2	7-9	14-19x20-27	*	*	*	g-ch	1.5	2-5	0	9-17x18-30	
hiratsukae	h-ci	1-1.5	?	15-22x18-28	*	*	*	h-g?	1	1	0	13-16x15-20	
phakopsoroides	h-y	1-1.5	7-10	21-26x28-35	*	*	*	g	1	1-1.5	0	8-14x12-21	
PHAKOPSORA													
apoda	y	1-1.5	6-8	18-23x24-30	*	*	*	g-ch	1.5-2	2.5-5	0	14-20x16-32	
incompleta	h-y	1-1.5	6-8	15-21x21-29	*	*	*	g-ci	1-1.5	1.5	0	8-15x18-26	
loudetiae	y-ci	1-1.5	7-9	18-21x26-32	*	*	*	g	2	2-3	0	14-18x16-28	
oplismeni	y	1.5	6-8	17-21x22-26	*	*	*	h-y	0.5-1	1	0	10-15x15-23	III spores germinating
setariae	h-y	1-1.5	7-8	14-19x21-28	*	*	*	g	1-1.5	1.5-2.5	0	10-16x20-26	
PUCCINIA													
addita	h-y	1-1.5	6-8	15-21x16-25	*	*	?	ch	1.5	3-4.5	10	15-20x25-54	rostrupioid, coronate; may = <i>P. coronata</i>
amophillinae	h-y	1.5-2.5	6-8	21-26x23-36	*	*	?	ch	1	4-5	15	16-20x38-60	II par. capitate; may = <i>P. pygmaea</i>
andropogonis-hirti	ci	1.5-2	8	19-26x25-33	*	*	*	ch	2-3	3-4	70	19-25x30-37	II par. clavate-capitate, usually curved
bottomleyae	ci	1.5-2.5	8	20-25x22-28	*	*	*	ch	2-3	4-6	150	21-26x31-40	II par. capitate
brachypodii	y	1.5-2	8	18-22x23-26	*	*	*	ch	1	2-4	10	15-21x28-35	II par. clavate-capitate, curved
coronata	h-y	1-1.5	6-8	13-26x14-36	*	*	*	ch	1-1.5	3-5	20	10-22x30-95	coronate; see Appendix I
decolorata	y	1	6	21-23x21-26	*	*	*	ch	2-3.5	6-9	65	18-23x29-36	II par. capitate
digitariae-velutinae	g-ci	1-1.5	6-8	18-26x25-33	*	*	*	g-ch	1-1.5	3-5	15	18-23x36-52	II par. mostly clavate
deschampsiae	h-y	1.5-2	8-11	18-23x25-30	*	*	?	ch	1.5-2	3-5	15	14-20x40-35	II par. mostly clavate
digna	y-g	1.5	6-8	20-27x23-30	*	*	*	ch	1.5-2.5	6-10	130	18-24x35-50	II par. capitate
distichophylli	y-g	1.5-2	8-10	21-25x25-30	*	*	*	ch	1.5	2-5	15	14-21x35-49	may = <i>P. poae-nemorialis</i>
enteropogonis	ci	1.5	6-8	18-20x19-25	*	*	*	ch	1.5-2.5	2.5-5	130	18-24x24-32	II paraphyses 1-septate
eragrostidicola	h-y	1.5-2	?	13-18x19-25	*	*	*	ch	2.5-3	4-6	70	23-27x29-35	II par. cylindric
eritraeensis	ci	1.5-2	5-8	20-23x24-30	*	*	*	ch	2.5-3	4-5	90	20-27x33-40	II par. clavate-capitate, usually curved
exigua	y-g	?	?	17-24 diam.	*	*	*	ch	?	?	15?	15-22x30-40	II par. capitate; prob. = <i>P. poae-nemorialis</i>
eylesii	ci-ch	1.5-2	8	16-20x20-24	*	*	*	g-ch	5-8	8-12	150	27-38x35-45	II par. capitate
hyparrhenicola	ch	2-3	6-8	24-27x28-31	*	*	*	g	1-1.5	3-3.5	15	16-19x33-40	II par. clavate-capitate, curved
kemorensis	ci-ch	1.5-2.5	6-8	19-23x23-29	*	*	*	ch	2-2.5	2-2.5	20	18-22x23-30	II par. mostly clavate-capitate
koeleriae	ci	1-1.5	8-10	19-25x23-30	*	*	*	ch	1	3-6	10	13-21x40-60	II par. clavate-capitate; may = <i>P. pygmaea</i>
kwaehnsienensis	y-ci	2.5-3	4?	18-20 diam.	*	*	*	ch	1.5-2.5	3-11	60	15-23x37-57	II par. clavate or capitate
magnusiana	y	1.5-2	6-8	18-19x26-42	*	*	*	ch	1-1.5	4-16	50	15-20x32-55	II par. mostly clavate
montanensis	y-ci	1.5-2	8-10	19-26x21-32	*	*	*	ch	1.5-2.5	3-7	10	18-34x35-64	II par. clavate
nasellae	y-g	2	8	20-26x23-30	*	*	*	ch	2-3	5-12	60	16-22x30-40	II par. mostly clavate, curved
oligocarpa	ci	1.5	10	16-22x22-28	*	*	*	ch	1.5?	2-5	10	16-23x33-46	II par. clavate

Species	Urediospores				Telia			Teliospores					
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall	Apical			
										Wall	Ped		
pachypes paradoxica	y	1.5	8	18-21x23-26	*			ch	2-2.5	3-5	80	23-26x31-37	II par. capitate
	y	2-3	6-8	18-22x20-28	*			ch	2-2.5	2-2.5	35	20-26x32-40	III spores verrucose; lower pore depressed
poae-nemoralis	h-y	1.5-2	8	17-24x22-29		*	*	ch	1.5	3-6	10	14-20x36-50	II par. clavate-capitate, curved, neck constricted; amphispores occasional
purpurea	ci	2	5-8	23-29x30-40	*			ch	3-3.5	4-5	95	24-30x40-50	II par. clavate-capitate, usually curved
pygmaea	ci	1.5	8	19-29x21-33		*	*	ch	1	3-5	10	12-20x30-50	II par. capitate, III spores often angular
saltensis	ci	1.5-2	5-6	16-20x18-25	*			ch	1.5-2.5	7-9	55	16-19x33-46	II par. capitate
stichosora	ci	2-3	4-6	17-25x23-33	*			ch	1.5?	2.5-5?	40	20-25x28-38	II par. capitate
tepperii	y	?	9	18-23x26-30	*			g-ch	3-3.5	4-7	250	20-23x45-70	II par. capitate
UREDIO													
agrostidis	y-g	2-3	6-8	21-24x24-27									II par. capitate
bromi-pauciflorae	y	1-1.5?	6-8	20-28x20-32									II par. clavate
crinitae	h-g	2-2.5	10-14	22-28x27-33									II par. capitate
dendrocalami	h-y	1.5	?	19-22x26-35									phakopsoroid
ditissima	y-ci	1.5	15-20	22-28x26-36									phakopsoroid; publ. as Puccinia dit.
geniculata	ci-ch	1.5-2	6-8	18-24x23-29									II par. clavate-capitate, curved
ischaemi-													
ciliaris	g-ci	2	8-10	24-28x28-37									II par. mostly clavate
ochlandiae	y	1	?	17-20x21-25									II par. mostly clavate
													phakopsoroid?
palmifoliae	y	1-1.5	?	17-20x21-27									phakopsoroid
paraphysata	h-y	1-1.5	8-10	17-20x19-26									phakopsoroid
trinichloae	y-ci	1	4-6	16-19x19-26									II par. cylindric to capitate
UROMYCES													
aristidae	g-ci	3-3.5	7-10	19-26x26-33	*			ch	2-3	4-7	100	18-26x23-30	teliospores smooth becoming tessellately cracked.

GROUP III: UREDIA PARAPHYSATE; UREDIOSPORES VERRUCCOSE; PORES EQUATORIAL: NO SPECIES KNOWN

GROUP IV: UREDIA PARAPHYSATE; UREDIOSPORES VERRUCCOSE; PORES SCATTERED

Species	Urediospores			Telia			Teliospores			Special		
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall		Apical Wall	Spore Size
UREDIO												
anthistiriae-												
tremulae	h-y	1-1.5	6-10	17-21x20-26								phakosporoid?
karatu	h-y	2-2.5	6-10	20-25x24-35								II par. capitata
keruelensis	h-y	1.5	?	16-20x18-26								II par. clavate or capitate
miscanthi-												
sinensis	y-ci	1.5	6-7	15-19x18-25								II par. clavate-cylindric, curved

GROUP V: UREDIA WITHOUT PARAPHYSES; UREDIOSPORES ECHINULATE; PORES EQUATORIAL

PUCCINIA													
advena	y-ci	1-1.5	2	17-21x35-44	*			g-ch	1.5-2.5	2	2	100	II spore apex 1.5-7, pores basal
andropogonis	ci	1.5-2	3-4	20-23x21-25	*			ch		5-8	70	II pores also basal and scattered	
aragata	y-g	1-1.5	4	19-23x27-35	*			g-ch	1.5-2.5	4-9	40	40	24-30x44-53
arthurii	g-ci	1.5	5	21-26x27-33	*			ch	2-3	4-7	90	90	18-24x30-43
arundinariae	ci	2-3	3-4	22-26x27-34	*			g-ch	2-3	4-7	130	130	17-23x43-70
bambusarum	g-ci	1.5-2	3	19-25x26-33	*			y-g	1-1.5	3-6	25	25	12-16x23-33
belizensis	ci-ch	2-3	3-5	25-33x32-56	*			y-ci	2-3	3-4	100	100	20-27x30-45
brachiariae	y-ci	1.5-2	2-3	25-30x28-33	*			ch	2.5-4	4-8	60	60	25-35x34-48
burnettii	y-g	3	4	21-25x26-30	*			ch	2.5-3.5	4-7	120	120	25-28x35-43
cacabata	ci	1.5-2	3-4	19-23x26-29	*			ch	3-4	4-7	115	115	19-25x29-36
cenchrus	ci	2-3	2-3	23-32x30-44	*			ch	1.5	6-9	15	15	19-26x40-54
chaetii	y-ci	1-1.5	3	17-23x23-29	*			ci-ch	1-1.5	1.5-2.5	15	15	18-26x39-44
cryptandri	ci	2-2.5	4-5	18-26x26-40	*			ch	1.5-3	4-9	100	100	24-32x40-54
deformata	h-y	1-1.5	27	18-24x26-32	*			ch	3-4	5-7	200	200	21-27x32-39
dolosoides	g-ci	1.5	3	21-27x27-33	*			ch	1-1.5	2-4	12	12	18-23x34-45
elgonensis	ci	1.5-2.5	4	24-30x35-40	*			ch	1-1.5	3-6	10	10	16-20x30-43
enaculata	ci	1.5-2	3-4	18-23x21-26	*			ch	1.5-2	4-8	60	60	16-23x30-44
enterriana	ci	1.5-2	3	14-20x16-22	*			ci	1.5-2	-7	907		14-20x36-58
eranthicola	ci	2-3.5	2	20-24x23-28	*			ch	2-2.5	5-8	40	40	16-20x32-42
erythropus	ci-ch	2-3	3-4	18-25x25-33	*			ch	1.5-2.5	3-5	130	130	16-20x33-45
eucomi	h-y	2-2.5	3	18-22x26-32	*			ch	2.5-4	5-9	100	100	24-30x35-44
faceta	ci	1.5-2	4	16-20x23-27	*			ch	2-2.5	2.5-4.5	100	100	16-20x28-34
graminicola	y	1-1.5	?	16-18x23-26	*			ch	1-2	3-5	90	90	20-24x25-30
graminis	g-ci	1.5-2	4	13-23x23-40	*			ch	1.5	5-10	50	50	16-23x35-55
gymmotrichis	ci	1.5	4	20-25x26-33	*			g-ch	1.5-2	5-9	60	60	16-20x34-45
huberii	y-ci	1.5	3-4	18-23x20-27	*			ch	2	2.5-5	25	25	18-26x24-39
hyparrheniae	h	1-1.5	3-4	24-27x27-33	*			g-ch	3-4	4-5.5	90	90	25-28x38-44
ichnanthi	ch	1.5-2	2-3	22-30x30-44	*			h-g	1	1	30	30	12-14x28-34
imperatae	h	1-2	4	18-22x23-30	*			ch	3-3.5	5-8	160	160	19-26x34-50
imposita	ci	1.5-2.5	3-4	23-30x27-35	*			ch	1.5-2.5	5-8	15	15	19-25x38-52
inclita	y-ci	1-2	3	22-26x24-32	*			ch	2.5-3.5	3-6	90	90	23-29x35-43
insolita	ci?	1.5-2	?	18-26x25-35	*			ch	?	-5	257	257	18-24x25-35
inulae-phragmiticola	g?	3	4	18-22x22-25	*			g-ch?	3-4?	-10	1507	1507	22-27x38-49
													sori large

II spore apex 10-19
 III spores germinating, collapsing
 II spore apex 3-8

Species	Urediospores			Telia			Teliospores			Special		
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall		Apical Wall	Ped
isiacae	g		3	16-22x18-29	*			g	4-5	6-9	160	24-28x40-55
jaagii	y-ci	1.5-2	4	17-22x22-27	*			ch	2.5-3.5	5-7	135	20-26x31-40
kakamariensis	h	1-1.5	2-3	15-20x20-26	*			ch	2.5-3	4-8	150	20-27x30-44
kawandensis	ci-ch	2.5-3	4-5	20-26x28-33	*			ch	2-3	4-7	90	25-29x33-43
kusiana	ci	1.5	2	17-20x22-30	*			ch	1	7-18	40	12-18x38-50
kusanoli	y	2-3	3-4	20-29x28-40	*			g-ch	2-3	8-12	200	12-23x46-80
lasiacidis	g	1	3-4	18-21x23-27	*			g	1-2	2-3.5	95	18-21x23-30
levigata	ci	1-2	3	18-25x24-29	*			g-ci	1-1.5	3-5	90	18-26x25-38
levis	ci-ch	1.5-2.5	2-3	19-26x23-30	*			ch	2.5-3.5	7-10	200	23-33x25-46
longinqua	ci	2-2.5	3-4	13-17x21-26	*			ch	2.5-3	4-6	150	16-19x40-54
lophatheri	y-ci	1.5	3	16-21x20-27	*			ch	2-2.5	4-8	70	20-29x23-30
millegranae	h-y	1	3	20-24x26-30	*			y-g	1	4-7	45	15-19x35-43
miscanthidii	h-y	1.5-2.5	3	19-23x24-30	*			ch	2-3	5-9	90	20-27x33-46
molinae	g-ci	3.5-5	3(-5)	20-24x22-29	*			g-ch	2.5-3.5	4-7	150	22-26x32-45
negrensis	g-ci	1-1.5	3	18-21x21-27	*			ch	1.5	2-4	60	16-20x22-26
nyasaensis	ch	2.5-3	3	23-26x28-32	*			ch	1.5-2	5-7	45	24-33x24-28
olyrae-latifoliae	y	1.5	2-3	17-26x23-33	*			ch	3-3.5	3-3.5	60	15-26x23-39
opipara	h-y	1-1.5	3-4	25-31x31-40	*			ch	2-3	4-7	70	23-28x33-44
orientalis	y-ci	1-1.5	2	18-21x26-38	*			ch	2-3	3-6	70	16-20x20-28
panici	ci	1.5-2	3-4	18-25x22-28	*			ch	1.5-2	3-7	75	16-23x30-45
pappophori	ci	1.5	4	24-29x31-38	*			ch	2-3	3-6	85	18-23x29-36
paspalina	y-ci	1.5	3	19-26x25-35	*			y-g	1.5-3	3-3.5	15	23-30x38-46
pennicillariae	?	?	?	?	?			ch?	?	?	15?	25x40-50
penniseti	ci	1.5	4	21-26x28-40	*			ch	1.5	3-8	20	18-25x40-65
phragmitis	ci	3-4	4	18-21x29-34	*			g-ch	2-3.5	4-7	200	16-21x45-64
pipitochaetii	ci	2-2.5	3-4	16-20x18-24	*			g-ch	2-2.5	3-7	50	15-19x30-42
polinicola	y	1.5-2.5	3	14-18x19-25	*			g-ch	3-3.5	4.5-6	90	17-22x27-36
polysora	y-g	1-2	4-5	23-29x29-36	*	*		ch	1.5	1.5-2.5	30	20-27x29-31
puttemansi	y-g	1.5	4	19-24x25-31	*			g-ch	1.5	4-7	40	16-20x30-37
rottboelliae	ci	1.5	3	19-24x25-30	*			ch	2.5-3.5	5-8	170	20-27x34-50
setariae	y-ci	2.5	4	17-18x26-28	*			ch	2-2.5	5-10	70	16-23x30-53
setariae-longisetae	ci	2-3	3-5	20-29x26-33	*			g-ch	2.5-3	5-10	110	23-27x38-54
setariae-viridis	ci	1.5-2	3	17-25x25-31	*			ch	3?	4-6	90	22-32x35-54
seymouriana	h	2-3	?	16-27x29-44	*			ch	1.5-2	5-8	150	15-33x38-60
sorghii	ci	1.5-2	3-4	23-28x26-30	*			ch	1-2	5-7	80	16-22x30-45
sparganioides	h	1.5-3	4	18-30x29-45	*			ch	1.5-2	5-7	100	14-23x38-62
sporoboli	ci	1-2	4-6	25-31x23-30	*			ch	1.5	5-10	50	16-26x28-50
subcentripora	y-g	3-4	4	24-30x29-36	*			ch	1.5-2	2	20	19-26x26-37
substriata	ci	1.5-2	4	23-30x28-36	*			ch	1.5-2	3-7	30	19-26x33-50
taiwaniana	y-ci	1-1.5	3	15-18x18-25	*			ch	1.5-2.5	3-5	70	18-24x25-30
torosa	y-g	3.5-5	4	17-23x27-37	*			g-ch	3	4-6	250	19-23x40-65
tripsaci	g-ci	1.5-2	3	26-31x26-33	*			ch	2-3	5-8	90	19-27x30-40
triseticola	y	1.5?	3-4	16-18x19-22	*	*	*	ci-ch	?	3-6	15	13-18x35-48
vilfae	h	1.5-2	6-8	20-26x26-33	*			ch	1.5-2.5	5-9	115	18-26x38-55
wiehei	h-y	1.5-2	3-4	19-23x22-32	*			ch	2-3.5	8-12	120	20-26x34-50
STEREOSTRATUM												
corticoides	g-ci	1.5-2	2-3	14-20x16-27	*			y-g	2.5-3	2.5-3	350	19-25x24-32

III spores minutely verruculose

II spore apex sometimes thicker

III spores rugose?

II pores basal

II spore apex 2-5

III spores angular, brittle

II spore apex 2.5-3.5

II spore apex 2.5-3.5

II spore apex 2.5-3.5

II spore apex 2.5-3.5

II spore apex 2.5-3.5

II spore apex 2.5-3.5

II spore apex 2.5-3.5

II spore apex 2.5-3.5

GROUP VI: UREDIA WITHOUT PARAPHYSES; UREDIOSPORES ECHINULATE; PORES SCATTERED

Species	Urediospores				Telia				Teliospores				Special
	Wall	Side	Pores	Spore Size	Nak	Cov	Par	Wall	Side	Apical	Ped	Spore Size	
	Color	Wall						Color	Wall	Wall			
ANGIOPSORA													
aurea	h	l	?	16-19x22-26	*	*		h-y	1	1	0	8-13x14-20	
lenticularis	h-y	1-1.5	7-8	15-20x22-27	*	*		g	1-1.5	2-4	0	11-16x16-30	
pallidus	h-y	1-1.5	?	12-16x16-25	*	*		g	1-1.5	2-3.5	0	10-18x12-26	
zeae	h-y	1.5-2	?	15-20x22-30	*	*		g-ch	1.5-2	3-4	0	12-18x16-36	
PUCCINIA													
aegopogonis	g	1-1.5	6-8	20-25x23-28	*	*		ch	2	3-6	55	20-25x26-30	
agropyri-ciliaris	h	2-3	6-8	18-23x23-27	*	*		ch	3	4-6	135	21-26x33-40	
agrosticola	h-y	1.5	6-8	15-20x19-26	*	*		y	1	3-5	15	6-14x40-70	
agrostidicola	h-y	1-2	?	14-16x18-28	*	*		ch	1-1.5	3-5	15	15-24x32-52	
amphigena	y	1.5-2	8-10	23-30x24-33	*	*		ch	1-1.5	8-11	50	17-27x36-56	
andropogonis	g-ci	1.5-2	8	18-23x21-27	*	*		ch	1.5-2	7-10	50	18-30x30-55	
arthraxonis	ci	1.5-2	4-6	20-23x21-25	*	*		ch	1.5-2.5	5-8	70	16-21x30-44	
arrundinellae	h	3	7-9	18-25x23-30	*	*		ch	3-4	4-5	100	27-33x35-42	
arundinellae-anomala	h-g	1.5-2	8	17-20x19-26	*	*		ch	2.5-3	5-9	130	20-27x33-46	
australis	h-y	2-3	8	18-25x26-35	*	*		ch	2-3	4-9	150	17-24x34-60	
austrorussiensis	h-y	1.5-2	6-8	14-17x15-23	*	*		ch	2.5-4	7-12	100	19-25x30-40	
boudierii	?	?	5-6	20-33x30-34	*	*		ch	1.5?	2-4?	20?	17x36	
boutelouae	h-g	1.5	?	19-23 diam.	*	*		ch	1-1.5	3-5	10	15-19x40-58	
bromoides	h-g	1-3	8	18-25x21-29	*	*		ch	2.5-3	5-7	120	18-24x23-30	
chloridis	g-ci	1.5-2.5	4-7	23-26x25-30	*	*		g-ch	3.5-5.5	4-7	30	22-30x34-49	
chrysopogi	h-g	1.5-2.5	4-8	18-22x18-23	*	*		ch	1.5-2.5	5-9	100	16-25x26-40	
conspicua	h-y	2-3	8?	20-23x24-30	*	*		ch	3-4	6-10	140	24-32x42-52	
coronata	h-y	1.5-2.5	4-6	14-19x24-36	*	*		ch	1	3-5	10	18-26x28-45	
crandallii	h-y	1-1.5	6-8	13-26x14-36	*	*		ch	1-1.5	3-5	20	10-22x30-95	
cryptica	y	2-2.5	8-10	23-27x29-35	*	*		ch	1.5-3.5	5-12	60	16-25x36-50	
diarrhenae	y-ci	1-1.5	6-8	19-26x21-29	*	*	?	ch	2-3	3-6	25	20-32x38-50	
dietelii	h-y	1-2	?	16-24x20-27	*	*		ch	1-1.5	5-10	50	12-20x40-52	
diplochloa	h-g	1.5-2	?	15-21x17-26	*	*		ch	2-3	5-7	75	17-24x24-35	
distichidis	h	1.5	4-5	13-15x14-18	*	*		ch	2-2.5	3-5	100	13-19x27-37	
dochna	y	3-4	6-8	23-28x26-33	*	*		ch	1.5-2.5	7-13	115	19-27x42-64	
elymi	y-g	1-1.5	6-8	18-23x20-27	*	*		g-ci	1	3-6	100	20-26x25-34	
elymi	y-g	1-1.5	6-8	12-18x19-24	*	*	?	g-ch	1	3-6	12	11-19x30-50	
epicampis	ci	3-5	6-9	17-23x23-32	*	*		g-ch	1-1.5	-3	15	10-18x45-90	
eragrostidis	h	2-3	6-8	21-25x23-29	*	*		g-ch	2.5-3.5	5-8	100	20-26x28-38	
eragrostidis-ferrugineae	h	?	?	14-22 diam.	*	*		g-ch	?	?	50	15-17x20-32	
exasperans	ci	?	4-6	17-20x20-27	*	*		ch	1.5-2	3-6	115	14-21x26-41	
festucae	y	1.5-2	6-8	17-25x22-29	*	*		ch	1.5-3	4-10	125	17-26x24-31	
flaccida	ci-ch	1-1.5	5-7	18-23x22-26	*	*		g-ch	1-1.5	4-8	25	13-20x40-63	
flavescens	y-g	1.5-2.5	4-6	18-25x23-29	*	*		g-ci	1-1.5	2-4	50	15-25x26-45	
garnotiae	ci?	1.5-2	6-8	17-21x23-28	*	*		ch	2-3	5-8	65	19-23x38-50	
guaranitica	g-ci	1.5-2?	4-6	19-28x25-46	*	*		ch?	1.5-2?	1.5-3?	?	16-22x40-80	
		2-4	4-6	17-23x20-28	*	*		ch	2-4	4-7	100	20-25x28-32	

III spores germinating
rostrupoid

also has equatorial pores

III spores often angular

III spores verrucose

III spores often angular
coronate; see Appendix IIII spores angular, often ridged
coronate

II spore apex 3-10

often diorchidoid
III spores often angular
rostrupoidoften diorchidoid
coronate
diorchidoidII descr. as verrucose;
probably echinulate

Species	Urediospores				Telia				Teliospores			
	Wall	Side	Pores	Spore Size	Nak	Cov	Par	Wall	Side	Apical	Ped	Spore Size
	Color	Wall						Color	Wall	Wall		
<i>gymnagonicola</i>	h-y	1.5-2	?	13-16x16-22	*	*		g-ch	3-5	4-6	80	18-22x28-41
<i>heimerliana</i>	y-ci	1.5-2	5	14-16x15-20	*	*		ch	1.5-2?	6-11	55	18-20x24-38
<i>hordei</i>	y	1.5-2	8-10	16-24x22-29	*	*		ch	1.5	3-6	15	18-25x39-58
<i>hordeina</i>	?	?	3-4?	16-22x16-27	*	*		ch	?	5-8	15	11-27x37-89
<i>kansensis</i>	h	1.5-2	6	15-18x17-22	*	*		ch	1.5-2.5	2-2.5	30	16-19x24-32
<i>koelericola</i>	?	?	4-5	?	*	*		ch	1.5-2.5	2-2.5	15?	12-15x52-75
<i>laesiagrostis</i>	y	1.5?	8?	20-35 diam.	*	*		ch	1.5-2	7-14	175	16-26x40-75
<i>leptospora</i>	h-y	1.5-2	?	17-20x24-29	*	*		ch	1.5	4-7	10	14-20x60-120
<i>lepturi</i>	y-ci	2-2.5	7	17-22x18-25	*	*		ch	3-4	4-5	50	21-27x25-32
<i>liatridis</i>	h-y	1.5-2	6-8	18-23x23-30	*	*		ch	1-2	4-7	10	16-29x42-55
<i>longissima</i>	g	1.5-2	10	18-28x27-35	*	*		g-ch	2-3	5-11	15	15-25x60-115
<i>luxuriosa</i>	y-ci	2-2.5	6-8	20-25x26-32	*	*		ch	1.5-2.5	5-12	115	23-33x40-60
<i>macra</i>	y	1-1.5	8	23-29x28-35	*	*		g-ch	2	5-8	65	20-28x39-50
<i>melicina</i>	ci	1.5-2	6-8	19-25x22-27	*	*		ch	1.5-3	4-7	100	21-26x29-38
<i>micrantha</i>	y-g	1.5	6-8	13-18x16-20	*	*		ch	1.5-2.5	6-13	70	18-26x30-50
<i>moliniicola</i>	h-y	1.5	?	10-13x14-16	*	*		ch	1.5-2	3-5	90	12-17x26-38
<i>moynoi</i>	ci	2-3	6-8	19-27x24-31	*	*		g-ch	1.5-2	5-13	100	14-24x34-55
<i>myasalandica</i>	y-g	1.5-2	8-10	18-25x23-29	*	*		g	1.5	4-6	65	21-24x36-46
<i>orzyopsisidis</i>	h	?	?	14-18x19-21	*	*		g-ch	3-4	4-5	85	17-20x30-38
<i>pattersoniana</i>	y	?	?	20-25 diam.	*	*		g?	4	7-9	100	20-25x34-46
<i>permixta</i>	g-ci	2-3	8-10	17-23x20-28	*	*		ci-ch	1-1.5	1-1.5	75	16-23x29-37
<i>perotidis</i>	y-g	2-3	8	13-17x15-19	*	*		ch	2-3.5	4-10	90	20-29x28-45
<i>piperii</i>	ci	2-2.5	5-7	18-22x24-27	*	*		ch	2.5-3.5	4-6	65	19-25x30-36
<i>pipathieri</i>	y	1.5-2	8-10	15-18x21-26	*	*		ch	1.5-2.5	3-5	30	19-26x42-62
<i>poarum</i>	ci	?	?	18-24x24-32	*	*		ch	?	?	10?	15-20x42-60
<i>pogonarthrae</i>	h-y	1-1.5	6-8	16-24x19-29	*	*		ch	1-1.5	3-7	10	15-23x35-55
<i>polypogonis</i>	ci	1.5-2.5	6	18-22x22-26	*	*		g	3-4	4-5	75	19-25x28-36
<i>praegracilis</i>	g-ci	2-3	5-6	19-24x23-28	*	*		g-ch	1.5-2.5	4-7	60	16-23x35-55
<i>pratensis</i>	y	1-1.5	6	16-19x16-21	*	*		ch	1	2-4	10	11-17x29-47
	y-ci	2-3	8	23-30x27-36	*	*		ch	5-6	?	30	27-32x35-50
<i>recondita</i>	y-ci	1-2	6-10	14-32x16-48	*	*		ch	1-1.5	3-7	10	10-25x32-85
<i>schedonardi</i>	y-ci	1.5-2	6-8	18-26x19-28	*	*		ch	1.5-2	3-7	130	16-25x27-42
<i>sch-smi</i>	h-y	1.5-2.5	8-10	18-24x22-29	*	*		g-ch	1.5-2.5	3-8	20	18-25x40-62
<i>scillae-rubrae</i>	h	1-1.5	5-7	24-32 diam.	*	*		g	1	1-3	30	17-23x45-60
<i>sessilis</i>	ci	1.5-2	8	18-24x23-30	*	*		ch	1.5	3-5	10	16-23x35-55
<i>sinica</i>	h	1.5	?	12-13x14-19	*	*		ch	2?	3-5.5	70	12-17x26-38
<i>stapifolae</i>	y-ci	1.5-2	8	17-21x19-25	*	*		ch	1-1.5	3-6	10	17-20x37-55
<i>stipae</i>	y-ci	1.5-2.5	6-8	18-23x21-26	*	*		ch	1.5-2	5-10	165	18-25x35-64
<i>stipae-sibiricae</i>	y-ci	2	6	15-18x16-22	*	*		ch	1.5-2.5	5-12	100	16-23x34-52
<i>stipina</i>	y	2	8-10	18-23x22-27	*	*		g-ch	2-2.5	6-10	140	16-23x40-60
<i>striformis</i>	h	1-2	10-15	19-26x19-30	*	*		ch	1	3-6	15	13-24x32-56
<i>subtilis</i>	ci	1.5-2	4-6	17-23x21-27	*	*		g-ch	1.5	3-7	80	16-22x36-46
<i>subtilipes</i>	h-y	1-1.5	?	13-15x16-18	*	*		ch	2-3	2.5-3.5	130	18-22x23-31
<i>tomipara</i>	y-g	1.5	6-8	17-21x18-25	*	*		g-ch	1-1.5	2-4	10	16-29x33-58
<i>tornata</i>	h-y	1.5	8	20-24x22-27	*	*		ch	1-2	1-2	50	16-22x26-40
<i>versicolor</i>	h	2-7	8-11	21-28x25-33	*	*		ch	3-4	4-8	130	25-32x35-46
<i>versicoloris</i>	y-g	2	12	23-26x28-35	*	*		g-ch	4-7	4-7	30	22-40x38-70
<i>vexans</i>	y-ci	2-3	8	24-29x26-32	*	*		ch	2.5-3	6-12	110	23-29x32-40
<i>zoysiae</i>	h-y	2-2.5	5-7	15-17x18-22	*	*		ch	2-3	4-6	100	16-21x28-42

III wall bilamellate
II spore apex 2-4
III spores often angular,
mesospores numerous

lower pore often depressed

coronate

III spores often angular

lower pore depressed

III spores striate

III spores ridged, angular

lower pore depressed

coronate

III spores verrucose, lower
pore depressed

See Appendix II

III spores often angular

III spores ridged, angular

III spores often angular

III spores often angular

sori in lines
amphispores formed

rostrupoid and muriform

II spore lumen stellate

III spores verrucose, lower pore
depressed

amphispores predominate

II spore apex 2.5-4

Species	Urediospores				Telia			Teliospores				Special	
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall	Apical			
										Wall	Spore Size		
UREDINO													
arundinellae	g-ci	1-1.5	3-4	26-29x27-37									
detenta	ci-ch	2.5-4	3-4	20-28x28-36									
egenula	ci	1.5-2.5	2	21-25x26-34									
hemingsii	ci	1.5-2	3-4	18-25x20-28									
morobeana	g-ci	1.5-2	3-4	20-35x25-31									
nakanishikii	y-g	2-2.5	4	18-21x20-24									
panici-montanae	y-ci	1	2?	16-20x19-25									
panici-plicati	ci	1.5	3	23-28x31-40									
urvilleanae	g-ci	2-2.5	3-4	20-25x25-30									
paspali-													
perrottettii	ci?	1.5	4	17-19x19-26									
ravennae	y-g?	1.5-2	3-4	24-28x30-40									
setariae	ci	2	3	23-28x27-32									
tribulis	ch	2-3	3-4	15-22x25-30									apex 3-5
zeugites	ci	1.5-2.5	3-4	19-21x23-26									
UROMYCES													
apludae	y-ci	1.5-2	3	16-20x17-22	*			ch	1.5-2	2-4	40	15-23x22-27	III spores often angular
argutus	g-ci	2-3	2-3	19-23x25-32	*			g-ch	1.5-2	7-10	65	16-19x28-38	
beckeropsis	y	2-3	?	16-20x20-22	*			ch	3	5-6	70	17-24x22-30	pores not described
blandus	g-ci	2.5-3	3-4	20-24x20-29	*			g-ch	2-3.5	3-7	80	19-24x24-30	
costaricensis	y-ci	1	2-4	16-21x20-28	*			g-ch	1	2-4	45	14-20x23-32	U. dactyloctenicola
dactyloctenii	g	1.5-2	3-4	18-23x23-27	*			ch	1.5-3	3-6	25	16-22x23-30	probably based on stray
													III spores
graminicola	g-ci	2-2.5	3-4	17-23x20-26	*			ch	1.5-2	3-9	80	13-19x21-32	III spores often angular
leptodermus	ci	1.5-2	3	23-27x27-33	*			g-ch	1-1.5	1-1.5	20	16-21x19-27	III spores mostly angular
linearis	ci	2.5-3	3-4	20-25x22-28	*			ch	2-3	5-8	90	18-23x23-30	
major	g-ci	2-2.5	4	19-23x21-26	*			ch	2-2.5	5-8	75	20-23x23-27	
macrochloae	y-g	1.5	4	16-18x18-21	?			ch	1.5-3	2-3	25	18-23x23-29	III spores often angular
muhlenbergiae	g	2-3	3-4	15-20x17-24	*			ch	1.5-2	5-10	30	14-21x18-28	
schoenanthi	y-ci	1.5-2	3	16-20x18-25	*			ch	1.5-2	2-4	45	17-23x21-28	III spores often angular
sporoboli	g-ci	1.5-2	4-5	23-30x29-42	*			ch	1.5-2.5	5-8	110	19-28x29-40	
sporoboloides	g-ci	2	4	20-26x26-34	*	*		ch	1.5-2.5	3.5-5	30	20-26x29-33	III spores mostly angular
tenuiculis	y-ci	1.5	3-5	19-24x25-32	*	*	?	g-ch	1-1.5	2-4	45	16-23x21-30	III spores mostly angular
trichoneurae	ci	1.5	3	22-25x27-33	*			ch	1-2	3-5	45	16-20x23-32	III spores often angular; II pores rarely scattered

Species	Urediospores			Telia			Teliospores			Spore Size	Special
	Wall Color	Side Wall	Pores	Nak	Cov	Par	Wall Color	Side Wall	Apical Wall		
<u>UREDIO</u>											
andropogonis-lepidi	h-y	1.5-3	6-8								
andropogonis-zealandicae	h-y	2	?								
anthistiriace	y-g	2	8-10								
ehrhartiae	y-ci	3.5-4	4-6								
calycinae	h	1.5	8-10								
ischaemi	h-y	1.5	?								
kigesiensis	y-g	1.5	?								
martynii	y-g	1.5	?								
paspali-											
longiflorae	y	1.5	8-10								
pogonarthrae	y-ci	1.5-2.5	6								
tacita	y-g	2-2.5	5-8								
toetoe	ci-ch	2.5-3	7-12								
yoshinagai	h	2-3	4-13								
<u>UROMYCES</u>											
acuminatus	h-g	2-3.5	7-10	*			g-ch	1.5	5-12	70	III spore apex variable, commonly acuminate
aegopogonis	y-g	1.5-2	6-8	*			ch	2-2.5	5-8	60	
amphidinus	y-g	1.5-2	7-9	*			g	1-1.5	3-7	50	
beckmanniae	h-y	2-2.5	8-10	*	*		ch	1-2	3-6	40	
bromicola	y	1.5-2	9-11	*	*		ch	2-3	2.5-3.5	25	III spores often ridged, angular
brominus	g-ci	1.5-2	5?	*	*		ch	1.5	3	30	III spores mostly angular
clignyi	g-ci	1.5-2	7-10	*			ch	3-5	3-6	110	III spores ridged
dactylidis	y-ci	2	5-8		*						III spores opaque, pedicels deciduous
danthoniiae	y-g	2-3.5	7-10	*			g-ch	1-2	2-4	25	See Appendix III
ehrhartae	y-ci	1-1.5	6-8	*			ch	1.5-3	6-10	100	autoecious
epicampis	ci	2-2.5	6-8	*			ch	1.5-2	4-7	100	III spores variable, apex often pointed
eragrostidis	g-ci	1-1.5	4-6	*			ch	1.5-2.5	5-7	75	
ferganensis	?	?	5-6	?	*		y?	?	-8	?	
fragilipes	?	?	?	?	*		ch	?	thin	30	undoubtedly this group; near <u>U. mysticus</u>
fuegianus	h	2.5-3.5	10-13	*			ch	1.5-2.5	4-8	80	
graminis	y-ci	2.5-3.5	5-8	*			ch	1.5-3	4-9	50	III par. especially on sheaths, spores angular
hordeinus	y-g	1.5-2	8-10	*	*		ch	1.5-2.5	3-6	20	
kenyensis	ci	1.5-2.5	6-8	*			ch	2-2.5	5-8	60	
leptochloae	g	2.5	7-8	*			ch	2-2.5	6-10	50	
minimus	y-ci	1.5-2	4-6	*			ch	1.5-2	5-9	30	
mysticus	y-g	2-2.5	8-12	?	*		ch	1.5-2.5	1.5-2.5	25	III covered but pulverulent, spores angular and ridged
nasellae	h	2.5	10-13	*			ch	2-3	5-8	70	
otakou	h-g	1.5-2	7-10	*			ch	2-2.5	6-11	60	
paspalicola	h-y	1	6-8	?	*		ch	2-2.5	2-3.5	30	III spores mostly angular
pegleriae	y-g	1.5-2	7-9	*	*		ch	1.5-2.5	3-5	25	III spores mostly angular
percanus	g-ci	2-3	5-8	*	*		ch	2-3	5-11	70	autoecious
phalaridicola	y-(ci?)	1.5-2	3?	*	*		ch	2-2.5	3-5	25	

Species	Urediospores			Telia			Teliospores			Special			
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall		Apical Wall	Ped	Spore Size
PUCCINIA													
aristidae	g	3-5	3-5	18-24x19-33	*			ch	2-4	6-10	130	18-29x30-50	pores also equatorial
leptochloae	g-ci	1.5-2.5	4-6	16-24x19-26	*			ch	2-3	4-7	95	17-24x25-34	
morigera	g-ci	2-3	6-7	18-23x19-26	*			ch	2-3.5	6-9	90	21-24x30-46	
polliniae- quadrinervis	ci	2.5	7-9	26-30 diam.	*			ch	3-3.5	5-7	60	23-26x30-36	II spores verrucose with rod-like papillae
pseudoatra	g-ci	2.5-3	7-8	22-26x23-27	*			ch	2-3	5-8	80	21-26x29-37	
setariae	g-ci	2.5-3.5	7-8	25-29x29-34	*			ch	3-5	8-11	90	24-32x37-48	
windsoriae	ci	1.5-2	5-6	20-26x24-31	*			ch	2-2.5	4-7	70	16-23x29-43	
opuntiae	g-ci	2-2.5	6-8	19-26x20-26	*			ch	2-2.5	4-9	80	19-26x26-45	
UREDIO													
chascolytri	y	1.5-2	6-8	20-25x23-32									
danthoniae	ci	?	?	14-20x17-22									
susica	g	2	3-5	18-25x21-26									
UROMYCES													
agropyri	ci?	?	4-5	19-20x21-23	*			g?	?	much	25?	16-18x28-37	pores may be equatorial
mussooriensis	y-g	2-2.5	3-5	16-21x20-25	*			g-ch	1.5-2.5	5-7	65	17-22x23-26	
peckianus	y-g	2.5-3	5-6	16-23x18-25	*			g-ch	1.5-3	4-10	100	16-21x24-35	
GROUP IX: UREDIA UNKNOWN OR LACKING; CHARACTERS UNCERTAIN, etc.													
PUCCINIA													
abei	not described				*			g-ch	3.5	3.5-4	300	19-25x43-70	coronate but not related to <i>P. coronata</i>
amianthina	not described				*			g?	2.5-3	2.5-3	70	17-25x22-36	
asperellae- japonicae	not described				*			ch	1.5-2.5	5-17	150	13-20x35-66	
bewisiae	not described				*			g-ch	2.5-3.5	5-7	90	24-29x34-39	autoecious; III spores germinating p.p. III spores germinating p.p. may be a variant of <i>P. erythrop</i> sometimes 3- or 4-celled. III spores minutely verruculose
avocensis	probably lacking				*			g-ch	3-4	3-5	120	25-28x37-44	
festucae- ovinae	not described				*			ch	1-1.5	3-4	60	16-22x28-43	
fushunensis	not described				*			ch	?	?	70	16-22x23-30	
fragilenta	not described				*			h-y	1	3-6	20?	6-10x25-40	
graminella	lacking				*			ch	2-3.5	8-23	200	20-30x40-60	
interveniens	lacking				*			g-ch	2-3	6-18	200	20-30x40-65	
miscanthicola	not described				*			ch	2-3	4	190	15-24x32-55	
mitriformis	not described				*			y-g	2-3	25-84	250	16-24x58-130	
neyraudiae	not described				*			ch?	2-2.5?	3-6	90	17-25x26-37	
okataensis	not described				*			g-ch	1.5-2	5-11	160	12-20x42-70	
opliameni	not described				*			ch	?	-8	80	14-21x28-38	

autoecious;
 III spores germinating p.p.
 III spores germinating p.p.
 may be a variant of *P. erythropus*,
 sometimes 3- or 4-celled.

III spores minutely verruculose

coronate but not related to
P. coronata

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Species	Urediospores				Telia			Teliospores				Special	
	Wall Color	Side Wall	Pores	Spore Size	Nak	Cov	Par	Wall Color	Side Wall	Apical Wall	Ped		Spore Size
panici-montanae	description not available				*			ch	1.5-2	2.5-5	40	21-27x26-34	Uromyces tripsaci, probably amphispores of this, smooth, apex 7-10, pore basal
phaeopoda	not described				*			ch?	2?	-12	170	20-26x32-50	
tankuensis	not described				*			ch	3-4	5-7	100	21-28x39-50	
tripsacicola	g-ci	1.5-2	1	19-26x42-66	*								
wolgensis	not described				*			h-g	7-10	9-12	25?	30-45x35-58	no par., spores echinulate no par., spores echinulate spores descr. as smooth, no par. spores descr. as smooth, no par. spores descr. as minutely papillose, no par.
xanthosperma	not described				*			y-g?	2?	4-10	75	16-25x42-58	
<u>UREDIO</u>													
lopatheri	g	2?	?	16-20x20-28									no par., spores echinulate no par., spores echinulate spores descr. as smooth, no par. spores descr. as smooth, no par. spores descr. as minutely papillose, no par.
panici-villosi	g-ci	1.5?	1-2?	18-24x24-30									
poiophila	h	?	?	20-22 diam.									
setariae-omuri				description not available									spores germinating apex a hyaline umbo, ped. fragile
stipae	ci?	?	?	20-25? diam.									
uromycoides	y?	1?	?	18-20x26-28									
<u>UROMYCES</u>													
cuspidatus	may be lacking				*			h-g	1-2	8-26	130	14-22x25-64	spores germinating apex a hyaline umbo, ped. fragile
ehrhartae	not described				*			g-ch	1.5-3	5-8	160	17-23x23-37	
giganteae	not described				*			g-ci?	2?	-11	?	16-21x24-32	
stipinus	not described				*								

SYNONYMOUS SPECIES INCLUDED IN PUCCINIA CORONATA

Appendix I

Telia Telia

	Urediospore Size Nak.	Cov.	Teliospore Size ¹	Ped.	Digit.	Source of Data
alpini-coronatae Muehlenth.	18-21x22-26	*	12-20x38-52	10	2-5	Mayor specimen
avenae-barbatae Gonz.-Frag.	16-23x24-36	*	12-22x36-72	15?	?	Flora Iberica
beckmanniae McAlp.	16-19x25-29	*	16-22x45-60	10	2-10	type specimen
brevicornis Ito	12-17x15-20	*	12-20x35-55	10	3-7	type specimen
corniculata Mayor et Viennot-Bourg.	19-24x22-27	*	15-22x35-48	25	5-20	type specimen
coronata Oda.	16-24x20-30	*	12-22x35-53	10	3-9	specimens
deyeuxiae Tai et Cheo	not described	*	10-13x53-75	15?	10-20	orig. description
epigejos Ito	20-26x24-32	*	14-20x45-90	10	3-12	type specimen
erikssonii Bub.	13-15x15-20	*	11-15x34-56	10	2-5	Bubak specimen
gibberosa Lagh.	21-25x24-30	*	12-18x38-55	15	2-9	Syd. Ured. No. 2723
hierochloae Ito	12-18x16-27	*	14-22x40-60	10	5-16	type specimen
himalayensis (Barcl.) Diet.	10-13x12-18	*	10-18x42-63	15	4-10	Indian specimen
lollii Niels.	16-24x20-30	*	12-22x35-52	10	3-10	specimens
mediterranea Trott.	16-17x18-25	*	12-16x40-60	10?	2-7	orig. description
melicae (Eriks.) Syd.	12-16x15-18	*	11-16x30-46	10	2-7	specimen
paniculariae Arth.	16-24x18-26	*	14-19x43-70	20	0-5	type specimen
pertenus Ito	16-18x16-24	*	10-16x40-84	10	5-15	type specimen
poae-pratensis Miura	13-16x16-20	*	13-16x45-67	10	5-25	Miura specimen
pumilae-coronatae H. Paul	21-25x26-30	*	13-18x43-53	10	2-5	Bubak specimen
rangiferina Ito	18-23x23-28	*	12-19x50-95	10	10-30	type specimen
subdigitata Arth. et Holw.	12-15x14-19	*	10-16x38-52	15	2-5	type specimen

¹ Measurements excluding the digitations.

Species	Urediospore Size	Teliospore Size	Source of Data
aconiti-rubri			
Ludi	?	16-23x46-73	type? specimen
actaeae-agropyri			
E. Fisch.	18-25 diam.	14-24x32-45	orig. description
actaeae-elymi Mayor	18-23x23-26	13-18x34-48	type? specimen
adpersa Diet. et Holw.			
18-23x21-28		16-21x38-50	type specimen
20-25x26-30		15-21x43-51	specimen
19-23x26-32		16-21x40-65	type specimen
20-25x21-30		13-17x39-60	orig. description
17-24x23-29		13-18x40-62	type specimen
agropyri-junceae Kleb.			
agopyrina Eriks.		13-18x38-48	Flowr. specimen
agrostidis Flowr.	16-22x20-25	15-24x34-43	type specimen
alternans Arth.	16-21x20-24	14-18x38-60	type specimen
ammophilae Guyot	20-25x26-33		
apocrypta Ell. et Tracy	20-22x23-26	14-19x38-56	type specimen
arrhenathericola			
E. Fisch.			specimen
borealis Juel	20-26x25-30	16-23x40-55	Sydow Monogr.
brachypus Speg.	18-22 diam.	13-20x35-45	type specimen
brachysora Diet.	20-24x24-30	12-18x42-72	Ito Mycol. Flora
bromicola (Mains)	20-25x24-31	15-22x30-45	
Guyot			
19-24x24-29		14-19x35-50	type? specimen
bromi-japonicae Ito	18-25x22-30	16-24x34-54	type specimen
bromi-maximi Guyot	19-24x20-30	13-20x44-65	type specimen
bromina Eriks.	20-24x24-28	14-18x36-58	specimen
cerinthes-agropyri			
rina Tranz.	22-27 diam.	17-24x32-48	orig. description
cinerea Arth.	18-23x23-29	16-21x45-70	type specimen
clematidis-secalis			
Dupais			
20-25x23-27		14-20x35-52	type specimen
19-26x24-32		13-21x50-85	type specimen
20-24x22-28		15-20x38-55	type specimen
19-20 diam.		14-17x36-41	orig. description
22-28 diam.		12-20x40-50	orig. description
23-32x32-42		16-24x43-60	type specimen
cockerelliana Bethel			
dactylidina Bub.			
dietrichiana Tranz.			
dispersa Eriks.			
elymicola Const.			

Species	Urediospore Size	Teliospore Size	Source of Data
elymi-sibericae Ito	20-22x28-32	12-18x38-65	Ito specimen
fujiensis Ito	17-22x22-29	12-17x30-55	Jap. specimen
glyceriae Ito	17-22x20-25	12-19x40-62	type specimen
haynaldiae Mayor et Viennot-Bourg.	20-24x20-29	15-20x35-55	type specimen
hierochloina Kleb.	17-22x22-25	16-23x32-45	orig. description
holcicola Guyot	22-24x24-29	18-24x40-60	type specimen
holcina Eriks.	19-24x23-27	16-24x38-58	specimen
hordei-maritimi Guyot	22-24x24-28	13-20x34-60	Guyot specimen
hordei-murini Buchw.	18-24x22-28	16-24x39-58	Arthur Manual
hordei-secalini Viennot-Bourg.	19-26x21-28	11-18x32-50	type specimen
ishikariensis Ito	18-24x20-28	14-20x38-62	type specimen
madritensis Maire	20-24x25-28	12-20x40-50	specimen
mellea Diet. et Neger	18-23x20-27	12-18x45-70	type specimen
mili-effusi Dupais	19-23x22-27	11-18x37-65	type specimen
obliterata Arth.	16-21x20-25	12-19x35-50	type specimen
narduri Gonz.-Frag.	18-20x21-28	20-25x48-60	orig. description; spec. from type loc. not similar
perminuta Arth.	15-18x16-22	10-16x28-42	type specimen
perplexans Plowr.	16-23x23-26	16-21x38-55	Plowr. specimen
persistens Plowr.	20-30 diam.	15-20x50-60	orig. description
procera Diet. et Holw.	26-32x32-48	15-23x45-74	type specimen
recondita Rob.	20-25x24-30	14-19x40-60	type specimen
ribigo-vera Wint.	17-24x20-32	16-24x26-80	orig. description
sardonensis Gaum.	16-21x20-25	12-18x40-56	type specimen
scarlensis Gaum.	20-23x22-25	12-17x40-60	Gaum. specimen
subalpina Lagh.	17-22x20-26	15-20x35-49	type specimen
thalictri-disticho- phylli E. Fisch. et Mayor	19-23x24-28	13-19x40-62	type specimen
thalictri-koeleriae Gaum.	21-24x23-26	10-16x45-70	Gaum. specimen
thalictri-poarum E. Fisch. et Mayor	14-18x15-20	14-18x40-62	Mayor specimen
thulensis Lagh.	?	14-23x36-44	orig. description
triseti Eriks.	19-23x21-26	16-23x36-53	specimen
tritici-duri Viennot- Bourg.	20-31x26-36	16-22x40-60	type specimen
trititina Eriks.	19-23x23-29	14-20x30-55	Eriks. specimen
tritricorum Speg.	?	11-18x40-50	orig. description

Appendix III

SYNONYMOUS SPECIES INCLUDED IN UROMYCES DACTYLIDIS

Species	Urediospore Size	Teliospore Size	Source of Data
adelphicus	?	16-20x23-29	type specimen
agrostidis (Gonz.-Frag.) Guyot	15-18x17-20	14-18x21-28	Syd., Ured. No. 855
airae-flexuosae	18-25x23-28	16-22x27-37	Guyot specimen
Ferd. et Winge	15-20x18-25	14-20x21-27	specimens
alopecuri Symb.	17-21x20-27	16-20x27-34	type specimen
atropidis Tranz.	19-24x23-29	14-19x20-28	specimens
dactylidis Oth	18-24x23-27	13-19x20-32	Syd. Ured. Nos. 1356, 1502
festucae Syd.	22-24x22-27	17-20x24-29	type specimen
festucae-nigricantis	20-26 diam.	14-20x21-28	type specimen
Gonz.-Frag.	17-21x20-25	14-23x20-27	type? specimen
lygei Syd.	16-24x20-28	17-22x26-35	type specimen
phlei-michellii	16-20x20-26	15-19x24-28	specimens
Cruch.	18-21x21-25	15-21x20-24	Mayor specimen
phyllachoroides	16-19x18-22	14-19x21-28	type specimen
P. Henn.	18-22x20-27	14-20x27-38	type specimen
poae Rab.	17-20x18-24	17-20x23-29	type specimen
poae-alpinae Rytz	14-23x26	22x24	orig. description
ranunculi-disticho-	23.5x26	16-22.5x22.5-33.5	orig. description
phylli Semadini	18-22x21-26	18-20x30-35	type specimen
ranunculi-festucae	not described	17-20x25-30	orig. description
Jaap	18x18-20	17-22x25-40	orig. description
sclerochloae Tranz.			
scleropoe Baudys			
et Picb.			
triseti Katajev			
volkarii Gaum.			
et Terrier			
vulpiae Camara			
vulpiae Losa Espana			

